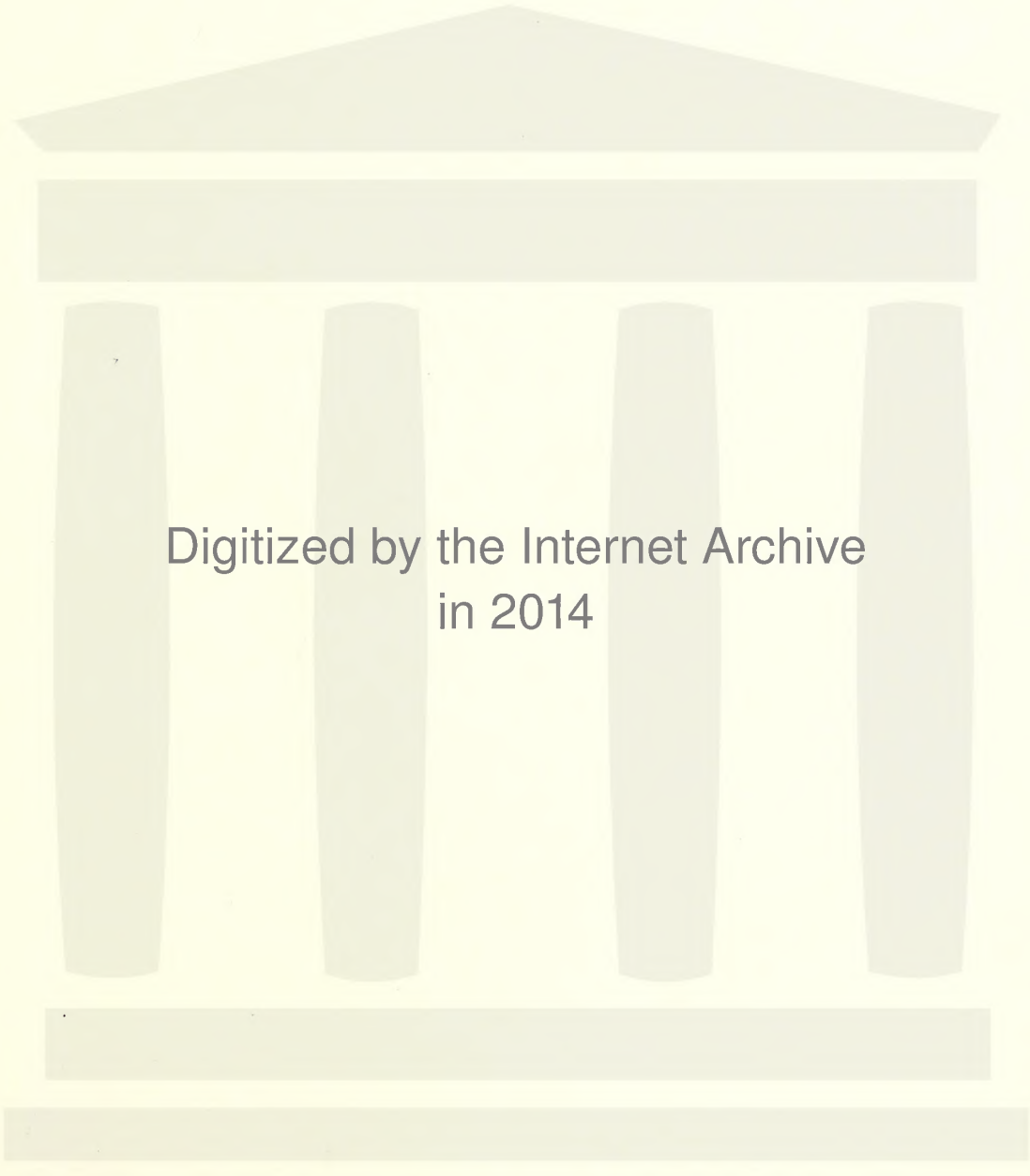
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Wildlife

IN NORTH CAROLINA

TEN CENTS JANUARY 1950

A WINTER SCENE

January snows make beautiful scenery, but they make living difficult for small game and songbirds. Winter is the critical period for wildlife, and its survival depends on adequate food and shelter.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

STATE OF NORTH CAROLINA

W. KERR SCOTT

Governor

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COVER

This month's cover is in keeping with the season and twelfth of a series on North Carolina's wildlife species, the mink.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

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★ ★ ★

Thanks to splendid cooperation on the part of Wildlife Resources Commission field personnel, wildlife clubs, and friends, this issue of WILDLIFE will run to 17,000 copies. More than 300 new readers were added to our lists by way of Christmas gifts. We wish all our readers a happy, prosperous 1950.

ROD AMUNDSON, Editor

(Photo by Margaret Fisler)

The mink is a water-loving animal, and haunts the margins of lakes and streams. This one was taken from the State Museum (stuffed) and placed in typical mink habitat. Note tracks of mink at right.

LET'S LEARN ABOUT OUR WILDLIFE

The Twelfth of a Series on The Wildlife Species of North Carolina

THE MINK

By ROD AMUNDSON

HISTORY

DESPITE a beautiful fur which commands market prices from five to twenty-five dollars, depending on quality and market trends, the mink has held its place among one of the country's most important fur-bearing animals. From early colonial times, the beauty of mink fur has made the animal much sought-after by furriers. Only on rare occasions has mink fur been out of fashion. At one time traders accepted mink furs from Indian trappers only to accommodate the latter, and often threw away the pelts or burned them.

Today first quality mink coats may sell for as much as five or six thousand dollars, and stoles made from only three or four furs may retail for far more than a hundred dollars.

Undoubtedly mink were once much more plentiful in North Carolina than they are today, but they probably never occurred in numbers that might be described as an abundance. Although of high individual value, there is little danger of the species becoming extinct. They are protected by law except during a short trapping season, and the difficulty of trapping them saves them from all but expert trappers. In addition to this, mink are now being produced in important numbers on mink ranches, and thus are assured of a place in the list of wild creatures as long as mink coats and neckpieces are the pride of some women and the envy of others.

CHARACTERISTICS

The mink is nothing more than a large weasel, with certain special adaptations. The species native to North Carolina is the Southeastern mink *Mustela vision mink*. Its range in this state extends from east to west, but is more common in the Piedmont than the mountain counties, and most common on the coastal plains and marshes. It is a water loving animal, a fact which closely ties in with the quality and durability of the fur. The mink reaches a length of about 24 inches, with larger specimens occurring from time to time. The females are generally smaller than males, and correspondingly lighter in weight, averaging an inch or more shorter and a few ounces lighter.

Mink closely resemble weasels in general form, being very long and slender, with long necks, a

small head, and a long bushy tail. The general color is a rich, dark, glossy brown, slightly darker on the tail, with white spots of various size under the chin and throat. The underparts of the body are a lighter color than over the back, and the feet may be almost entirely black. The eyes are small, beady, and slightly protruding.

The jaws are powerful and armed with sharp carnivore teeth. The feet are partly webbed as a special adaptation for swimming. Mink are excellent swimmers, capable of overtaking fish, muskrats, and other water creatures. Their adaptability to their environment is another reason why such a valuable animal has survived so well. In addition to being excellent swimmers, mink are capable of climbing trees. They can move with amazing speed over rough ground, and are masters of the art of disappearing from view in a minimum of cover.

Being closely related to weasels and skunks, mink are equipped with a pair of musk glands which are capable of producing a musk with a highly disagreeable odor. The musk cannot be expelled forceably from the glands as in the case of skunks, but under conditions of extreme excitement or danger, minks can produce a most repulsive odor which may linger in the vicinity of expulsion for days or even weeks. To many people, the musk of minks is far more sickening than that produced by either skunks or weasels. In the case of otters (close relatives of minks) the musk of these animals was once sought after by perfumers to mix with flower scents and to be used for perfume. This was a common practice in certain European countries before soap became popular, and it is doubtful if modern nostrils would consider body odor, attar of roses, and musk a pleasant combination.

FOOD HABITS

The value of mink skins places them in danger of extinction; at the same time, it prevents them from becoming victims of the wrath of sportsmen who become furious at the sight of a predator taking their favorite small game. Mink are almost completely carnivorous, and will take rabbits, quail, squirrels, woodcocks, small ducks, songbirds, and, much to their discredit, poultry.

Like other predatory animals, except their smaller cousins, the weasels, mink usually kill only what they can eat, and take food which is easiest to obtain. This latter thought removes mink from the list of important predators. Crayfish, snails, crabs, fish, lizards, mice, cotton rats, snakes, grasshoppers, and other abundant but relatively unimportant animal forms, are much easier to obtain than game species. They comprise most of the items in the mink menu.

Many a farmer has watched his flock of chickens disappear mysteriously, one by one, only to find that the thief was a mink which had gained access to the henhouse and settled down to a period of comfortable and easy living. In the case of large birds, such as chickens, the mink may do nothing more than drink the blood and eat the brains for desert, leaving the rest of the bird to waste. Occasionally a mink may kill a number of chickens, apparently for the sheer love of killing. But before condemning mink for this activity, mankind must remember the hunters who slaughtered thousands of elk to obtain only the front teeth to display on expensive vests.

Mink spend most of their time along streams and marshes. It is only natural that most of their food comes from a watery habitat. They may dive into water to pursue muskrats or fish, or delve under stones to extract crayfish. In coastal waters they catch crabs, and an examination of mink droppings along a stream bank or beach will show ample evidence of a taste for seafoods in the undigested exoskeletons of crayfish and crabs. More careful examination of the pellets will disclose remnants of insects, and probably fragments of bird bones and feathers.

The mink's ability to climb trees places the eggs and young of birds in danger, although there is little evidence that he is a serious menace to birds, all things considered.

BREEDING HABITS

Except during actual mating, mink show no evidence of pairing off. Mating occurs during the early spring, and the young are born in late spring or early summer. There may be from three to nine or ten in a litter, but five or six are the usual number. At birth the youngsters are blind, hairless, and

(Courtesy U. S. Fish & Wildlife Service)

Mink have musk glands typical of the family to which otters and skunks belong.

At birth, mink are blind, hairless, and helpless. This litter of eight was only a few days old when photographed. (Photo courtesy U. S. Fish & Wildlife Service)

helpless. The eyes do not open until some time between ten days to two weeks after birth. The female parent is left to the task of rearing the young alone, the sire having gone off to forage for food or to make further amorous conquests. (In mink farm conditions, one male is sufficient to serve from three to seven or eight females.)

As soon as the youngsters' eyes open they are ready to take solid food. This consists of choice items of diet which the mother may bring in from foraging expeditions about the countryside.

Only one litter of young per year is born, and these are capable of reproduction the following year.

ENEMIES

A discussion of the enemies of the mink should begin with some facts about the animal's tremendous vitality. Although no larger than a small housecat, and much lighter, the mink is capable of eluding or defending himself against all but attacks from the air. They are extremely tenacious of life, and survive extreme punishment from traps or in battle. They are lithe and powerful, and their sharp teeth and lightning speed add to their ferocity. The musk glands turn away animals which might plan to make a meal of them, but these apparently do not deter the "tiger of the air"—the great horned owl—the only serious enemy of the mink other than man.

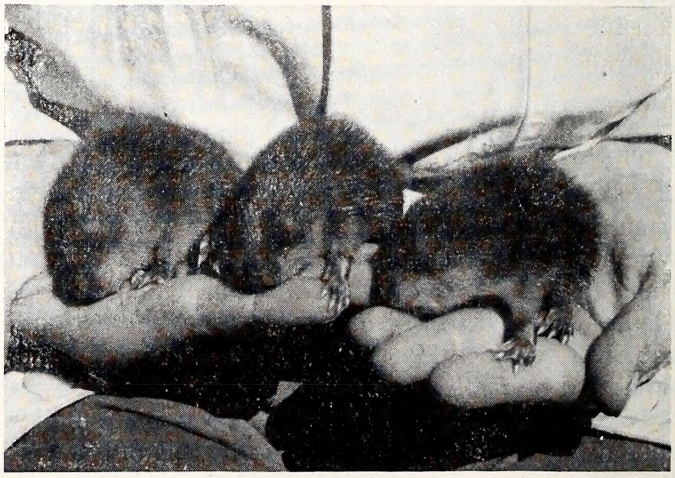
Occasionally mink may become infected with round worms and other parasites, but these are rarely serious. In domestic mink there is a disease called "tail rot" which infects pen-reared animals, but this is not known to affect wild individuals.

MANAGEMENT

The fact that mink can be raised successfully in captivity removes any danger of mink becoming extinct; at the same time wild mink are an important source of income to professional trappers and to farm lads who make a great deal of their spending money trapping mink. The animal is definitely a predator, yet no one would advocate eradication of the entire species because of the sins of a few individuals.

Mink are protected by a closed season each year as a means of preventing over-harvesting of the furs. The law permits farmers who suffer poultry raids to kill the offending individual on the spot without fear of retribution.

Perhaps more stringent protection, a shorter trapping season, and other management controls would serve to increase mink populations. The mink, however, seems to have fitted comfortably into the scheme of things despite his bad habits, and is probably better off left in its present circumstances. Its valuable pelt insures a measure of legal protection, and at the same time keeps it within reasonable population boundaries.



These are young muskrats, which often fall prey to foraging mink.

Because of their importance to fur and game animals, Groundhogs, or Woodchucks, are the subject of next month's item in this series.

MUTINY ON THE BOUNTIES

By Bill Wolf

North Carolina Does Not Have a Bounty System.
Here Are Some Good Reasons Why It Should Never Pay Bounties.

(Reprinted Courtesy SPORTS AFIELD)

The average hunter believes wholeheartedly in bounties as a way to control predators; the average conservation official doesn't. The hunter bases his conclusions on what he sees in the field. The game department or conservation official bases his view on scientific research, and, therefore, is more likely to be right. However, the hunter's license money usually pays the official's salary and the bounty fees, as well. This puts the official in the position of an employee spending his employer's money. Naturally, the hunter's wishes are observed, even if not respected. One of the nicest things about the bounty system is that it's usually hunters' money going down the drain, not the general taxpayer's.

Pennsylvania is the outstanding example of the money phases of the bountiful bounty system. It has been paying bounties since 1683, more than two and a half centuries. At various times, it has condemned as wildlife criminals such animals and birds as wolves, red and gray foxes, panthers (puma, cougar or mountain lion), wildcats, skunks, mink, weasels, many hawks and owls, and even squirrels.

Its bounty system reached a peak of indiscrimination in 1885 with the passage of Pennsylvania's infamous "Scalp Act," which made it dangerous for anything with teeth or talons to move in the outdoors. In its two-year reign of terror, the Scalp Act caused the slaughter of 180,000 hawks and owls alone, with no attempt made to distinguish between valuable and harmful species, except that Arcadian, screech or barn owls were excluded from bounty payments! The cruel act was repealed in 1887 ostensibly because the massacre of the hawks and owls led to a vast increase in the numbers of rats and mice, but that was only face saving. The real reason was the number of frauds perpetrated by nearly everyone who could get a finger in the pie.

Nevertheless, Pennsylvania continued to spend hundreds of thousands until, after a new and rather inclusive law passed in 1913, it was brought up sharp by further evidence of widespread frauds. Under the 1913 method of presenting claims and collecting fees, bounty claimants, justices of the peace and even county commissioners worked hand-in-hand to rook the Commonwealth. The modern art of the kickback was not known then.

As a result, the state gradually tightened its safeguards against false claims until today it has about as fraudproof a bounty system as is possible. Complete control is in the hands of the Pennsylvania Game Commission, which is authorized to use hunting license money as it sees fit for bounties.

It pays out heavily, too—$158,697 in the period from June 1, 1947, to May 31, 1948, for 18,807 weasels, 16,951 gray foxes, 16,606 red foxes, 22 goshawks, and 1,429 great horned owls. The year before the bounty figure was $217,000. Bounty rates at present are: For red and gray foxes (with exceptions which will be noted), $4 each; weasels, $1 each; goshawks (adult), $2; fledgling, $1; great horned owl (adult), $4; fledgling, $2.

Bobcats are predators, but so scarce in most of North Carolina that they do very little damage to game species. Shown above is a captive animal.

This little sparrow hawk is often shot by sportsmen, but lives almost entirely on insects and mice.

The exceptions on foxes make small game hunters see pink instead of red, and disclose a fine little piece of class legislation. Foxes are unprotected throughout the state, except that, by special Act of Assembly, killing them in Chester and Delaware Counties is restricted to protection of personal property only, and no bounties are paid for either red or gray foxes that are killed in these two counties. The fact that these counties are the center of formal fox hunting in Pennsylvania cannot be coincidental, and the shotgun hunter considers the act a discriminatory law that favors a very few members of the pink-coated riding set over the many gunners in these heavily populated counties.

Other states have had similar experiences with bounties, although few on the same scale or over the same span of centuries as Pennsylvania. Some have abandoned bounties as a state project, others have retained them. Chief predators with prices on their heads now are those mentioned in Pennsylvania's list, plus wolves and coyotes over most of their range; wildcats (also known as the bay lynx and bobcat); black bears, occasionally; the mountain lion or cougar, in the Far West; crows, sharp-shinned and Cooper's hawks.

And what has been these states' experience with bounties as a means of controlling predators which admittedly become too numerous at times? There isn't any good, factual evidence to prove that bounties materially reduce predator populations, or ever have done so except in small, local areas. Nor is there any evidence that most of the animals and birds turned in for bounties wouldn't have been killed anyhow, by trappers, by sportsmen, by farmers, and cattle, sheep and poultry raisers. For instance, the fierce goshawks (goose hawk) destroy many game birds, especially grouse, but no one is going to go out and deliberately kill goshawks for a bounty because there aren't that many.

Nonetheless, bounty payments go on. As an example, the Michigan Department of Conservation has iterated and reiterated its opinion that bounties are not an effective predator-control measure, especially where foxes are concerned. Michigan has had unhappy experiences with bounties. From 1869 to the present, Michigan has paid more than $1½ million in bounties on wolves, coyotes, and other animals—and the coyote has increased nicely, thank you. From 1917 to 1921, every crook who could did a thriving business collecting Michigan's nice and high wolf and coyote bounties on skins imported from the western states (while the western states paid wolf bounties on badger skins presented to them as wolf cub hides).

The conservation department was firm about foxes, however. It said it was convinced that a state bounty on foxes would "cost a lot of money and produce no demonstrable effects on either the bountied predators or their natural prey, the game animals." And, again, "State game men feel that a reduction in fox numbers is desirable (and inevitable), but that the bounty system just doesn't work."

Many states pay bounties on foxes. In North Carolina they are protected by law because of their value as a sporting animal.

So what did Michigan do in 1947? It put a $5 bounty on red foxes! Because it had changed its opinion? Not at all, but because of dat old debbil Public Opinion. It listened to the voice of the peepul, who noted the increase in foxes and thought a large bounty would cure the evil.

How about Pennsylvania, which set its first bounty at 10 and 15 shillings on male and female wolves in 1683 and has continued the bounty system right up to the present? Well, it no longer has any wolves, no more "panthers" or mountain lions, and few wildcats—but these animals would have retreated anyhow before the advance of man, as they have everywhere. Neither does Pennsylvania have any

buffalo, native elk, moose or passenger pigeons as it once did, and there never was any bounty on them. They vanished with the settlers' arrival and large settlements. Passenger pigeons are included for a reason—if they were as abundant now as they once were, there would be a terrific clamor for a bounty on them because they would be incompatible with modern agriculture.

Other animals have been quite happy under Pennsylvania's bounty system. Gray foxes are increasing and expanding their range, despite the blood money on their scalps. Red foxes have thrived under the bounty system. There has been no noticeable decline in weasels, destructive hawks and owls. The bounty system hasn't done much to control these predators.

Ontario spent half a million dollars on wolf bounties in 10 years, and an observer wrote: "Bounty payments have utterly failed to reduce the wolf population." That was in 1937, and Ontario still has a terrific wolf problem. I have in my possession a curious letter written by an Indian trapper to Gifford Swartman, Indian agent at Sioux Lookout, Ontario, last year. The letter accompanied a wolf's head sent in for bounty (although the whole skin is required). George Ignace, the trapper, explained succinctly: "I am sending you this Wolf head which been eating up by wolfs. This wolf been caught by snare, can't find any other Part of the Wolf but Head. Deers geting scares now round Bell lake I guess that's why she eat that Wolf. may be didnt even got enough feed was too them many in one Bunch there were 9 in one bunches . . . the one he eat my wolf was still nine of em yet." Apparently, Ontario wolves have taken to eating each other.

Vermont has spent freely on bounties, including one on rattlesnakes, and has come to the conclusion that predators are not controlled by that method. As for the rattlesnakes, there is more than a strong suspicion that some of those presented in claims came from a nearby section in New York. In Missouri, $153,502 was paid in wolf and coyote bounties over 11 years—and an article in the December, 1947, issue of the *Missouri Conservationist* stated:

"If the bounty system, which aimed at reducing the population of predators, had been successful in doing so, the number of bounties paid per 100 square miles would surely have diminished in 11 years. Instead, by 1946 it had increased to more than 2.5 times the 1936 figures. . . . Thus the bounty system, while almost nine times as costly in 1946 as in 1936, seems neither to have reduced the population of these predators, nor to have eliminated the evil-doers among them."

The list of states could go on, but the answer always comes up to the same: Bounties apparently do not control predators.

These, then, are the arguments against bounties in approximately the order of their importance:

- The growing certainty that bounty payments do not affect materially the predator population.
- The certain knowledge that bounty payments must take up too much slack in normal annual killing of predators before they can possibly affect the surplus. For instance, in a state where 20,000 foxes are trapped, hunted or otherwise killed annually without a bounty, 20,000 claims must be paid with a bounty system before it can take effect.
- An increasing doubt that most predators are as black as they are painted.
- Bounty payments lure inexperienced trappers into trying to make some extra cash, with resulting death and injury to more valuable game or domestic animals through careless traps set.
- The fact that all wildlife, including predators, belongs to all persons, and that there are some who get as much pleasure out of seeing a fox, hawk, or a wildcat in its native state as they would out of watching a grouse take off or getting a shot at a rabbit.
- The ever-present possibility of fraud.

Let's look briefly at the third item, the one that says predators may not be complete heels. All predators on bounty lists without doubt kill some game, but there is considerable evidence that the good they do outweighs their cussedness. Take foxes, the most controversial of all predators. Foxes do kill

Biologists believe large hawks such as this to be more beneficial than harmful. They may take some game, but pay their way in rodent control.

Bears are predators, but few people would want to see a bounty placed on them.

game birds, rabbits and other desirable species; but foxes also eat mice, rats and such small rodents, woodchucks, ground squirrels and various destructive creatures. Orchardists, especially like to have them around, because they keep under control the mice which ruin so many young trees by girdling them. Besides, they provide a small income annually for trappers, they provide an immense amount of sport for rural fox hunters, and a limited amount of sport for followers of the horse, hound and horn. Furthermore, the red fox is a decorative addition to the landscape; no one has anything much good to say for the gray fox.

A national absurdity would be a Federal bounty on crows. Crows in great numbers are very destructive. Ducks Unlimited wages an unceasing war on them in the Canadian breeding grounds of ducks because of the eggs and young ducklings they eat. In other areas, there are entirely too many crows. But crows in moderate numbers probably do as much good as harm. They may tear up sprouting corn to eat it, but they also follow the plow earlier and eat innumerable larvae of the corn borer. Omnivorous, they dine on many injurious forms of life.

Wolves, coyotes, weasels, the hawks and owls all are overrated as killers of game species. They prey on whatever is easiest to catch, and that seldom is a game species which has been reared in the wilds. The weak, the sick, the slow of foot, or slow of wing are their chief victims among game birds and animals, which is theoretically good for the various species. In fact, predators have been called "nature's pruning knife" by those who like such fanciful terms. They cut out the unfit.

However, predators must be controlled at times, and if the bounty system doesn't work, what will? States which have had sad experiences with bounties are trying to educate their public to acceptance of the logical solution—and that is, intense local war where needed on predators by professional trappers and other exterminators, plus the education of farmer-trappers in the same sort of work. No one in conservation denies the necessity of controlling predators occasionally in certain areas, but all students of the problem are coming to the conclusion that such control should be the work of men trained to the job.

The Far West always has favored professional or trained trappers or poisoners over amateurs in controlling wolves and cougars, although high bounties (as much as $50 on a cougar in Oregon, for instance) go to pro and amateur alike. The East is leaning toward trained men.

The conservationists who oppose bounties are not sentimentalists, pitying the predators; they are realists. Some doubt entirely the value of any predators control. They feel that nature will take its course and predators will do what comes naturally until their food supply falls off, whereupon the predators will decline.

These same extremists also feel that the best man can do when he interferes with nature is to provide better food and cover for game, so that it can increase to the point where there is enough for both natural predators and that worst predator of them all, you and me.

The great horned owl is one of the most ferocious of predatory birds. Where individuals prey on quail coveys or poultry flocks, they should be eliminated. Despite bounties paid in several states horned owl populations have never been reduced significantly. Although these birds take considerable game, they help keep rodents under control. They are not protected by law in North Carolina, and seem to be controlled effectively without bounty payments.

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

BEN JAMES, FORMER LAW ENFORCEMENT SUPERVISOR OF DISTRICT 1 HAS BEEN TRANSFERRED TO A POSITION WITH THE GAME DIVISION OF THE WILDLIFE RESOURCES COMMISSION AND WILL SERVE AS AN ASSISTANT PROJECT LEADER IN THE FARM GAME HABITAT DEVELOPMENT PROJECT. FORMER DISTRICT FISH AND GAME PROTECTOR LEON K. THOMAS OF WILLIAMSTON HAS REPLACED JAMES AS SUPERVISOR OF DISTRICT 1.

THERE HAS BEEN A GOOD RESPONSE TO LAST MONTH'S REMINDER THAT THERE IS AN ABUNDANCE OF LESPEDEZA BICOLOR AVAILABLE FREE OF CHARGE TO LANDOWNERS AND SPORTSMEN WHO WISH TO OBTAIN IT FROM THE WILDLIFE COMMISSION FOR SMALL GAME HABITAT PLANTINGS. THERE IS STILL A GOOD SUPPLY WHICH HAS NOT YET BEEN ORDERED.

THIS IS TO STRAIGHTEN OUT A MISUNDERSTANDING AMONG MANY FISHERMEN AND FISH POND OWNERS AS TO THE AVAILABILITY OF STATE-PRODUCED FISH FOR STOCKING: FISH PRODUCED BY THE WILDLIFE COMMISSION'S HATCHERIES GO FIRST TO PUBLIC WATERS THROUGHOUT THE STATE. ANY SURPLUS FISH MAY BE SOLD TO PRIVATE INDIVIDUALS AT A SCHEDULED PRICE. THEY ARE NEVER GIVEN AWAY TO PRIVATE PERSONS. FREE FISH MAY BE OBTAINED THROUGH THE U. S. SOIL CONSERVATION SERVICE WHICH GETS THEM FROM THE U. S. FISH AND WILDLIFE SERVICE, OR BY CONTACTING DIRECTLY THE FISH AND WILDLIFE SERVICE, WASHINGTON, D. C.

ANOTHER APPEAL IS MADE TO HUNTERS TO FILL IN THE REPORT BLANK TO BE FOUND IN THE BACK OF THE 1949-1950 HUNTING REGULATION BOOKLET, AND SEND THE INFORMATION IN TO THE WILDLIFE RESOURCES COMMISSION. THIS INFORMATION IS NEEDED IN ORDER TO HELP EVALUATE THE STATUS OF OUR GAME SPECIES AND TO SET NEXT SEASON'S REGULATIONS MORE INTELLIGENTLY. AS SOON AS YOUR HUNTING FOR THE CURRENT SEASON IS COMPLETED,FILL OUT THE INFORMATION SHEET AND SEND IT IN. YOU NEED NOT SIGN YOUR NAME TO THE REPORT UNLESS YOU WISH TO DO SO.

MOTION PICTURE CAMERAS ARE GRINDING AWAY AT A 25-MINUTE 16-MM COLOR-SOUND MOTION PICTURE FOR THE WILDLIFE RESOURCES COMMISSION. THE FILM SHOULD BE COMPLETED AND READY FOR DISTRIBUTION BY NEXT FALL. THE FILM WILL DEAL WITH THE ACTIVITIES AND POLICIES OF THE COMMISSION, WITH PLENTY OF HUNTING AND FISHING SCENES TO MAKE IT MORE ENJOYABLE. IT IS BEING PRODUCED BY M.P.O., A NEW YORK FIRM WHICH RECENTLY COMPLETED THE FINEST OUTDOOR FILM OF ITS KIND FOR THE NASH MOTOR COMPANY.

THE 1950 FISHING REGULATIONS ARE OFF THE PRESS AND IN THE HANDS OF MOST LICENSE DEALERS. IF YOU HAVE NOT RECEIVED A COPY WRITE DIRECTLY TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH.

PERSONS WHO RECEIVED AND USED THE COMMISSION'S "HUNTING BY PERMISSION ONLY" SIGNS ARE URGED TO WRITE TO THE EDITOR OF THIS MAGAZINE TO REPORT WHETHER THE SIGNS WERE A SUCCESS IN CUTTING DOWN TRESPASSING AND IN ENCOURAGING SPORTSMEN TO ASK PERMISSION BEFORE HUNTING ON PRIVATE LAND.

NEWSPAPER STORIES AND A REPORT IN THIS MAGAZINE CONCERNING THE ANNUAL MEETING OF THE N. C. WILDLIFE FEDERATION MEETING AT NAGS HEAD LAST FALL FAILED TO MENTION THE FACT THAT THE REV. WAYNE WILLIAMS, OTEEN, N. C., WAS ELECTED A STATE VICE PRESIDENT OF THE FEDERATION. WILLIAMS IS AN ENTHUSIASTIC CONSERVATIONIST, AND SERVES AS CHAPLAIN AT THE OTEEN VETERANS CONVALESCENT HOSPITAL NEAR ASHEVILLE.

Above: Loading a dog for the day's deer hunt. Below: Proof of the formula: (l. to r.) Henry Williams, Ellis Simon, Clyde Patton, Mike Pugh, and Win Donat.

COOPERATIO

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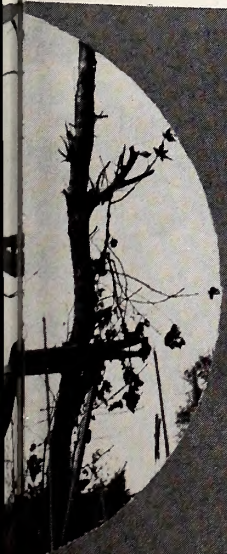
Above: Part of living quarters at Camp Bryan.
Below: Resting after the hunt are: (l. to r.) Win Donat, Thomas White, Ellis Simon, and Clyde P. Patton.

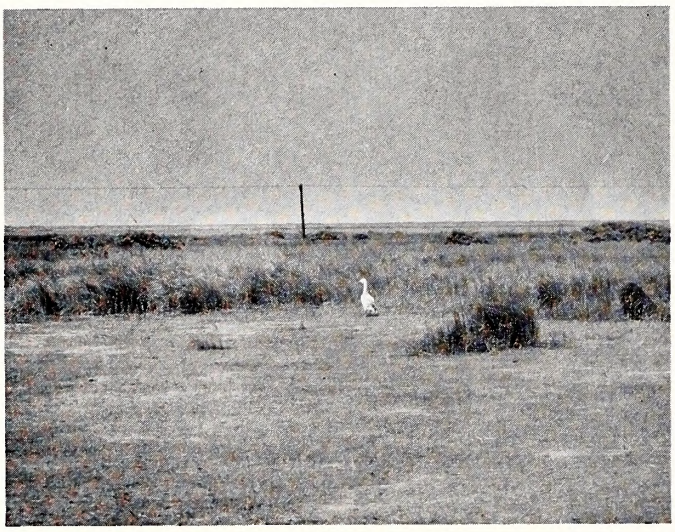


RENAL COCCIDIOSIS IN PEA ISLAND CANADA GEESE

By STUART CRITCHER
North Carolina Wildlife Resources Commission
Raleigh, North Carolina

Introduction and Investigations

For the past several years numbers of Canada geese (*Branta c. canadensis*) on the Pea Island Migratory Waterfowl Refuge, North Carolina, have become sick and many have died from unknown causes. Until the winter of 1949 efforts to determine



An eaten-out area on Pea Island. Although only rotted stubble and abundant droppings remained, geese continued to use these areas.

the responsible causes were unsucessful. On the 14th of March 1949, an investigation of the area was made which revealed an unusually serious condition. It was determined that more geese were affected and were dying than during previous years. It was estimated that there were approximately 3,000 geese using the refuge at this time, and that at least ten per cent of them were visibly sick. Some of the sick birds flew with difficulty, others could not fly at all, and some were so seriously ill that they were barely able to walk. A number of dead birds were found. On the 6th and 7th of April 1949, the refuge was covered thoroughly and an estimated 2,000 geese were present at this time The percentage of birds visably afflicted did not appear to be as great as it was on the 14th of March. A thorough search was made for the remains of dead geese, and about 150 were found. Some had died within the past few days, and other appeared to have been dead for several weeks. The greatest number of carcasses were found in the windrows of debris along the western shore of the island. It is believed that over 500 geese died on the refuge this past winter, as a result of the disease.

During these field investigations, numbers of geese were observed that were affected to various degrees. Few, if any, external symptoms were apparent during the early stages; however, as the disease progressed, it was noted that the afflicted birds did not hold their heads and necks as erect as did the healthier geese, and flight was accomplished with difficulty. In the later stages, the birds lost the power of flight, and even walked with difficulty. It is believed that the final stages last only a few days, and death follows in almost every case. It was noted that as long as a sick bird is able to move, it attempts to remain with the flock; and as long as it is able to reach food and water, feeding and drinking activities continue. Loss of appetite is not characteristic of this disease.

At no time was there any evidence of snow geese or ducks being affected. It has not been determined whether they are immune, or had escaped the organism in their feeding activities.

A quantitative study of the available waterfowl food plants was not made during either investigation. However, it was not difficult to observe that a shortage of the more desirable food plants existed Almost complete eat-outs were noted in many places The most apparent of these existed where there were rather heavy stands of saltmarsh cordgrass, (*Spartina alterniflora* Lois) (Figure 1). Although this plant is not rated as a better food, it had been completely utilized. In some of the fresh water ponds on the refuge, which had carried an excellent growth of coastal waterhyssop, (*Bacopa monnieria* (L.) Wettst), there remained only a relatively small quantity of rotting stems. The plants had evidently been stripped of the leaves and fruits. Waterhyssop is rated as only locally fair (Martin and Uhler, 1939) The more desirable foods on the refuge had been consumed prior to the investigations. Starvation or malnutrition, however, is not believed to have been the direct cause in the death of the geese.

Repeated utilization of these eaten-out areas resulted in extremely unsanitary conditions. Droppings occurred in great numbers. Where these had fallen in the shallow skim of surface water, ideal conditions prevailed for the transmission of diseases and parasites.

On April 7, eight sick Canada geese were collected

for examination in the Poultry Disease Laboratory at North Carolina State College in Raleigh. One bird died en route and was discarded and two were kept for treatment with sulfamerazine. The five remaining were autopsied and all of them were found to be suffering from acute renal coccidiosis. Bacteriological cultures were found negative for contagious diseases. Internal examination revealed extreme emaciation in all five cases. The flesh, as were the internal organs, was paler than normal. The kidneys appeared somewhat swollen, and were obviously dotted with small yellowish-white nodules, about the size of a pinhead. Microscopic examination of sections of these kidneys showed enlargement of a high percentage of the kidney tubules. The epithelial walls of most of the tubules had been attacked and were partially or wholly destroyed by the protozan parasite (Figures 2 and 3). The sectionings, and smears made from bits of the diseased kidneys, revealed great numbers and several developmental stages of the coccidia, *Eimeria truncata* Railliet and Lucet.

One of the geese treated with sulfamerazine died shortly after treatment was begun, the other bird recovered completely and was released.

All eight of the affected geese, which were caught for examination, were less than one year of age. Four were males and four were females. As is ordinarily true in any unhealthy bird, every sick goose was infected with an abnormally high population of external parasites, primarily lice of the Order Mallophaga. Total body weights of these eight geese were from 4¼ to 4⅞ pounds.

Autopsy serial numbers assigned to these geese by the Poultry Disease Laboratory are: 46,957 to 46,963, inclusive.

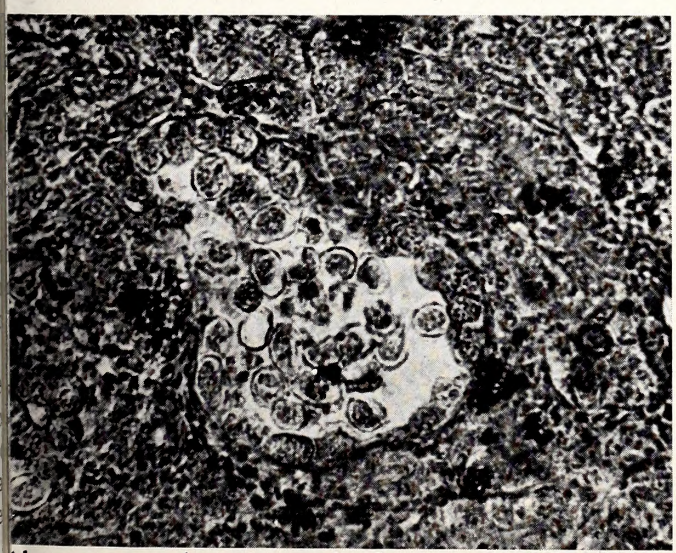
Review of Previous Reports

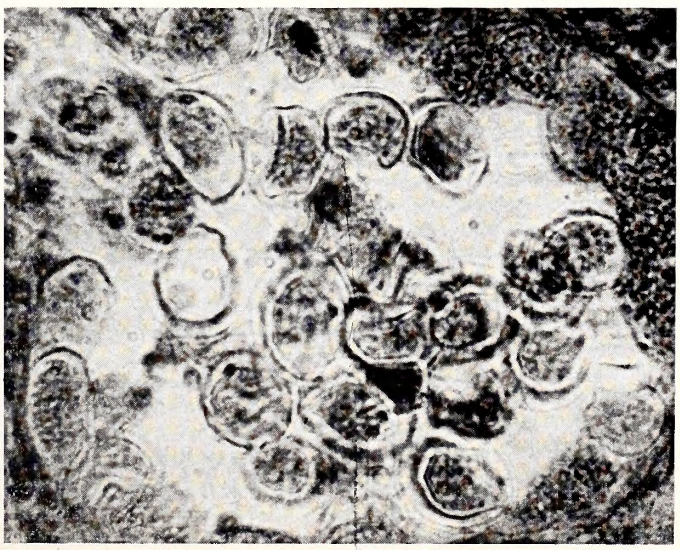
Until 1929, when McNutt reported an outbreak of renal coccidiosis in Iowa, the disease was known only in Europe. Railliet and Lucet (1890) first described this disease in France. The causative organism, *Eimeria truncata,* was described and named by these men in the same year. Spiegl (1921) reported an outbreak of the disease in Germany, and in his report stated that it was highly fatal; affected domestic geese surviving only about 24 hours. The kidneys were enlarged and the tubules contained great numbers of coccidia. Another outbreak in Germany was reported by Lerch (1923). From 80 to 100 per cent of the young geese were affected; there were no recoveries. The first recorded case of renal coccidiosis in this country (McNutt, 1929) occurred in northern Iowa in 1926. The infection existed in a flock of pen-raised geese. In the first year 97 per cent of the young goslings died. The following year more rigid sanitary conditions were observed and the mortality rate dropped to 17 per cent. The two flocks were raised from the eggs of three mature female geese, and during both outbreaks these mature geese were unaffected. This may indicate immunity in adult birds. Biester and Schwarte (1948) state that " . . . the goose alone of domestic poultry is afflicted with renal coccidiosis caused by *Eimeria truncata,*" and ". . . so far as is known, the parasite is specific to geese." The disease is very acute, lasting only two or three days, and usually there are no recoveries. Hardcastle (1943) lists *Anser anser anser* as the only host of *Eimeria truncata.*

Summary and Conclusion

Approximately 500 Canada geese died on the Pea Island Migratory Waterfowl Refuge during February, March and April of 1949. From the laboratory results and the similarity of the field findings and the prevailing physical conditions of the habitat of those recorded in the literature, it is concluded that the death of these Canada geese is due primarily to renal coccidiosis, caused by *Eimeria truncata* Railliet and Lucet. Snow geese and ducks were

(Continued on page 22)





Above are two photomicrographs showing an enlarged kidney tubule and the numerous oocysts ("eggs") which occur in the kidney tissues and which are responsible for the death of geese on Pea Island.

GRANVILLE COUNTY CLUB HOLDS TURKEY SHOOT

A rifle marksman steps up to the firing line to place five shots as near the bullseye as possible . . .

. . . and after the shooting is over, contestants check their targets to see who won the turkey. Some scores were nearly perfect.

Main prize of the day, in addition to about fifty turkeys, was an expensive shotgun which was won by a man who placed a bird shot nearest the intersection of two cross lines on a target fifty yards away. In addition to the rifle range and cross-line targets, shooters blazed away at clay pigeons sprung from the Granville County Club's new skeet trap. Nearly 500 shooters put their dollar on the barrelhead and competed for turkeys, netting the club a profit of over $100.00. The National Guard and Highway Patrolmen (on leave) kept a constant watch to enforce safety rules, and helped keep score at the firing lines. Farmers in the Oxford-Henderson neighborhood turned up in equal numbers with town sportsmen, and more than held their own in marksmanship and prize winning. Throughout the state clubs were raising money by carrying on similar activities.

STATE'S LARGEST "POSTED" SIGN—FOR WATERMELONS

Above is undoubtedly the largest "Posted" sign in North Carolina, if not the entire United States. Fortunately for hunters, however, the sign was painted last summer to protect a patch of watermelons, not as a prohibition to hunting.

North Carolina State Library
Raleigh

JUNIOR WILDLIFE CLUB NOTES

Local Birds And Their Nests

By DAISY H. STRICKLAND

My section of the fourth grade of Cleveland School, Johnston County, has just finished a unit on local birds and their nests.

We collected about eighteen nests, which we could identify. We put a tree in the classroom in which the nests were placed, then looked up the particular bird in John James Audubon's book.

Mrs. Strickland and Cleveland School pupils with birds' nest study demonstration. The nests are old ones abandoned by the birds. Birds in tree are made of paper by wildlife club members.

Using this as a guide, we drew pictures of the birds and put them in the tree in or near the nests. Paragraphs were written about each bird.

When the unit was completed, we gave a program at the regular meeting of the Wildlife Club. Mr. Woodlief, the principal, and Mrs. Weston's section of the fourth grade were invited. (They have a Wildlife Club, too.) The program was opened by singing "At Four O'Clock In The Morning." (This song tells about the robin singing at four o'clock in the morning.) The nests were then pointed out by the president, Jackie Ennis, as the following program was given:

Carolyn Watkins.....Brown Thrasher
Earl Adams.....Blue Jay
John Barbour.....Kingbird
Barbara Sherrill.....Mocking Bird
Myra Langley.....Warbling Vireo
Norma Ennis.....Cardinal
Mavis McGee.....Wood Thrush
Cronin Byrd.....Sparrows
Atlee Roberts.....Blue Bird
B. J. Clifton.....Mourning Dove
Chester Honeycutt.....Hooded Warbler
Leamon Canady.....Summer Tanager
Marshall Dupree.....Humming Bird

At these meetings we stress parliamentary procedure and oral English. New officers are elected each six weeks in order to give more children an opportunity to preside.

The subjects correlated with this unit were music, freehand drawing, English, spelling, geography, and science. In music, songs about birds were sung. Many new words were learned; also the spelling of them. The birds were drawn freehand in an art lesson. An invitation was written to the fourth grade during an English lesson, and sketches about each bird were written. The study of science and geography were included while discussing migration and climate.

The birds and their nests identified were: Cardinal, Brown Thrasher, Blue Jay, Kingbird, Mockingbird, Warbling Vireo, Wood Thrush, Sparrow, Blue Bird, Mourning Dove, Hooded Warbler, Summer Tanager, Humming Bird, Robin, and the Cat Bird.

The nests which created most interest were the Humming Bird and the Warbling Vireo.

SANFORD NOTES

By FRED LAWRENCE

In Sanford High School in November, 1947, Mr. Vance Hulbert had the idea of starting a junior wildlife club. It met the approval of the school authorities and in active preflight club, of which Mr. Hulbert was the sponsor.

Shelton Wicker, president of the Lee County Wildlife Club, started the activity of the club by a speech about the purposes, aims and activity of the club. He also stated that the Lee County Wildlife Club would give us backing.

Jack Campbell was also a big help by giving talks and assisting us. We had movies on conservation and wildlife. The club was a success so it was continued.

(See page 22)

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

In the September 1949 issue we started this page with a suggestion that you fellows all over the state consider the formation of a state-wide bird dog trial. Contacts in all areas show that there are many groups who promote local bird dog trials and yet we never hear of them. In order to get such groups on record so that we can keep in touch, I'm asking the secretaries of each of these groups to send me the following information:

1. Name of Group
2. Name of President or Secretary
3. Address of President or Secretary
4. What trials do you hold? When?
5. Does your group operate under the American Field Trial Association rules? Is it a member of this Association?
6. Is your group interested in promoting a state-wide amateur shooting dog championship?
7. WILL YOU HELP PROMOTE SUCH AN ACTIVITY?

Of course, any additional information you may care to send will be welcome. There are some really fine shooting dogs born, bred, trained and owned right here in North Carolina—they are not confined to the rich owners or fancy breeding lines. A shooting dog is rated because of what he does and can do and a state-wide championship trial could be one of the best activities taking place this spring if those of you who are interested would get together and plan it. Let's hear from you SOON!—W.D.

To quote a portion of a letter from Mr. A. J. H. of Canton, N. C., "I learned through Dr. Weaver of the State Department of Education that a good job is being done in preparing a bulletin or booklet on Wildlife Resources of North Carolina. I tried to say at the Morganton meeting last year that the Commission had a golden opportunity to get information to the right people in the form of teaching equipment for the schools. Since the schools are launching out in a full scale program of teaching resource use, this development by your department is a most laudible work."

Thank you, Sir! It is a fact that the booklet mentioned in the foregoing is now off the press and is being used by all sorts of groups throughout the state. The title is "Our Wildlife And Its Wise Use," and it is designed for school groups of a reading level that can handle the material and where the children are too young, the material should be easily assimilated by the teacher. Another feature of these booklets is that they should provide worthwhile conservation information and facts for any one who would have use for such material. The booklet may be had upon request.

Mr. R. L. B. Jr., of Warsaw, N. C., asks, "Please settle a friendly argument for me by telling me the laws of hunting game out of season on your own property. I contend that it is as illegal there as on any other person's land. What does the Wildlife Commission say about this?"

The answer to this question is clearly contained in the section of the General Statutes quoted herein:

" 113-87. Permits to kill game injurious to agriculture. The board shall have power to issue permits to kill any species of birds or animals which may become seriously injurious to agriculture or other interests in any particular community, or such birds or animals may be captured alive by it or under its discretion and planted in other sections of the State for re-stocking, or may be disposed of in such other manner as it may determine: Provided, that birds and animals committing depredations may be taken

at any time without a permit while committing, or about to commit, such depredations. Any permit issued pursuant to this section shall expire within four (4) months after the date of issuance. (1935, c. 486, s. 4.)"

If the question is hinting at the ownership of game, then it must be remembered that such ownership lies in all the people of the state collectively and in no one person, otherwise the law cited is the only condition we can think of where game may be lawfully killed out of season.

Mr. T. W. R. of Hickory, N. C., asks, "Why not stock trout in the fall of the year rather than the spring? Fall stocked trout would have a chance to become wild and be harder to catch in the spring. Also, wouldn't those you catch be of better quality?"

The survival rate of spring stocked trout is about five times greater than that of fall stocked trout. Such a low survival rate of fall stocked trout is due to various factors, including the keen competition with native trout for a limited food supply during the winter months, and stream washouts before the fishing season. The intensity of fishing is the basis for stocking hatchery fish, and the highest percentage of hatchery reared fish surviving to be taken by the fishermen provides for maximum utilization of the money spent for rearing them. By stocking trout in the spring when they can be taken by the anglers, fishing pressure on the native population is eased, fewer fishermen go home with an empty creel, and the most economical use of the sportsmen's "hatchery" license dollar is made.

TURN IN THOSE MIGRATORY BIRD BANDS

If you find a band on a duck, a goose, a dove or any other migratory bird, flatten it out and send it with a letter telling where the bird was killed to:

Wildlife Resources Commission, Box 2919, Raleigh, N. C. You will receive a letter telling you where and when the bird was banded.

Your cooperation is needed!

LAW ENFORCEMENT PERSONNEL

G. A. JONES, JR., RALEIGH, CHIEF OF LAW ENFORCEMENT

Supervisors

	County	Address	Telephone
Caine, E. W.	Robeson	Lumberton, N. C.	716-J
C. M. Capel	Montgomery	Mt. Gilead, N. C.	19
Edminsten, W. C.	Watauga	Boone, N. C.	336-W
Jarrett, George C.	Clay	Hayesville, N. C.	137
Norton, Wm. H.	Johnston	Smithfield, N. C.	4111-County
Rivers, D. G.	McDowell	Marion, N. C.	494-J
Rollins, Tom L.	Lee	Sanford, N. C.	625-L
Thomas, Leon K.	Bertie	Windsor, N. C.	2086
Watson, Raymond A.	Craven	New Bern, N. C.	2641-3

Wildlife Patrolmen

Bagwell, Preston S., Jr.	Lenoir	Kinston, N. C.	4238
Chadwick, Oscar	Cumberland	Fayetteville, N. C.	36511
Kinsey, Wm. D.	Orange	Hillsboro, N. C.	8957
Kirby, Chas. F.	Buncombe	Asheville, N. C.	3-2770
Wade, Frank	Vance	Henderson, N. C.	3804
Lupton, Floyd J.	Iredell	Statesville, N. C.	6439

District Game and Fish Protectors

Allen, Raymond Y.	Caswell	Leasburg, N. C.	4573-Roxboro
Armfield, Stewart M.	Union	Marshville, N. C.	24-R
Bagwell, Wade F.	Transylvania	Brevard, N. C.	582-W
Ballance, Jack B.	Dare	Kill Devil Hills, N. C.	414-Nags Head
Barnes, D. E.	Gates	Corapeake, N. C.	202
Barr, George A.	Stokes	King, N. C.	5111
Bell, D. B.	Lenoir	Kinston, N. C.	2017
Bentley, Joel	Wilkes	N. Wilkesboro, N. C.	316-J
Biggers, Homer L.	Burke	Morganton, N. C.	1066
Bordeaux, Amos	Sampson	Ingold, N. C.	250-Garland
Bostick, Leroy F.	Scotland	Laurel Hill, N. C.	2811
Boswell, B. L.	Columbus	Bolton, N. C.	Station 5
Bowmer, H. T.	Brunswick	Southport, N. C.	3516
Braswell, Henry C.	Nash	Sharpsburg, N. C.	5704
Bratten, J. H.	Dare	Manns Harbor, N. C.	
Bray, Walter	Richmond	Rockingham, N. C.	671-J
Brummitt, Thos. D.	Granville	Oxford, N. C.	992
Bryan, Dewitt T.	Alleghany	Glade Valley, N. C.	72F4
Bullock, Cecil Ross	Martin	Robersonville, N. C.	2155
Caldwell, R. O.	Cabarrus	Concord, N. C.	8477
Campbell, Jack W.	Lee	Sanford, N. C.	22961
Carpenter, Wallace M.	Avery	Three Mile, N. C.	5
Cope, W. B.	Jackson	Sylva, N. C.	224-W
Culbreth, Sam	Bladen	Elizabethtown, N. C.	3081
Cumings, Earl	Rowan	Salisbury, N. C.	
Dalrymple, Arnold	Cherokee	Murphy, N. C.	241-J
Daniel, Maurice J.	Person	Roxboro, N. C.	4573
Davis, Alex S.	Carteret	Marshallburg, N. C.	362
Davis, John K.	Guilford	Oak Ridge, N. C.	Call Murl Benlow
Davis, Lawrence Ray	Randolph	Asheboro, N. C.	422

Dowdy, R. A.	Currituck	Grandy, N. C.	732-Currituck
Duvall, Pawnee	Brunswick	Ash, N. C.	8109
Ellis, J. Walter	Mitchell	Toecane, N. C.	324-Bakersville
Estes, James E., Jr.	Swain	Bryson City, N. C.	
Evans, Robert W.	Chowan	Edenton, N. C.	202-Summer Hill
Fairchild, John T.	Catawba	Conover, N. C.	587-W
Faircloth, Thomas Leroy	Cumberland	Fayetteville, N. C.	7242
Garland, C. L.	Graham	Robbinsville, N. C.	13-J Sheriff's off.
Gowan, T. W.	McDowell	Marion, N. C.	905-X
Green, James B.	Davidson	Thomasville, N. C.	22415
Hammer, Robert H.	Robeson	Lumberton, N. C.	493-J
Harris, R. K.	Gaston	Charlotte, N. C.	43827
Heath, Walter L.	Greene	Snow Hill, N. C.	2436
Helms, Paul L.	Stanly	Albemarle, N. C.	394
Hewett, D. C.	Columbus	Lake Waccamaw, N. C.	2335
Higgins, Milton B.	Yancey	Burnsville, N. C.	County Courthouse
Hilliard, Henry M.	Edgecombe	Tarboro, N. C.	4532
Hines, Hugh V.	New Hanover	Wrightsville Beach, N. C.	2073
Howell, Admiral Griffith	Wayne	Goldsboro, N. C.	3039-J
Hudson, George N.	Carteret	Marshallburg, N. C.	362 % Alex Davis
Hughes, N. B.	Northampton	Jackson, N. C.	786
Humphrey, H. B.	Onslow	Mayesville, N. C.	109
Ipock, Bill Harper	Duplin	Wallace, N. C.	2406
Jones, A. Eugene	Chatham	Siler City, N. C.	291-J
Jones, Wallace W.	Forsyth	Winston-Salem, N. C.	5921
King, J. Harold	Johnston	Smithfield, N. C.	19-W
Koonce, Lonnie	Onslow	Richlands, N. C.	576
Koontz, Roland H.	Ashe	Jefferson, N. C.	64-M
Lee, George W.	Lincoln	Lincolnton, N. C.	9123 (Leave message)
Logan, R. F.	Orange	Chapel Hill, N. C.	3676
McConnaughey, W. C.	Robeson	Red Springs, N. C.	3721
McDonald, Woodrow W.	Moore	Southern Pines, N. C.	6784
McLean, Clyde	Caldwell	Collettsville, N. C.	2
McLean, H. R.	Hoke	Raeford, N. C.	5145
Mackie, Frank W.	Yadkin	Yadkinville, N. C.	3161
Mosley, E. L.	Tyrrell	Columbia, N. C.	2071
Myles, James L.	Henderson	Tuxedo, N. C.	196
Neal, A. D.	Rockingham	Stokesdale, N. C.	5056-Madison
Ormand, Charles W.	Haywood	Canton, N. C.	
Osborne, Tommie F.	Watauga	Boone, N. C.	279-R
Pack, Arthur	Polk	Tryon, N. C.	495
Parham, Francis Taylor	Vance	Henderson, N. C.	1027-JX
Parker, C. R.	Jones	Pollocksville, N. C.	37-5
Penland, Claud	Macon	Franklin, N. C.	174
Perry, Vance M.	Alamance	Graham, N. C.	6-2749
Perry, Bob Dixon	Wake	Wake Forest, N. C.	5-106 (Carter's Esso)
Pettitt, Casper Morgan	Halifax	Roanoke Rapids, N. C.	6897-Weldon
Pierce, Lester A.	Pasquotank	Elizabeth City, N. C.	08W5-County Holly
Poole, Cleat E.	Montgomery	Troy, N. C.	145-M
Price, Jesse O.	Rutherford	Avondale, N. C.	2965 (Parent's home)
Pridgen, Alton D.	Warren	Macon, N. C.	5258-Warrenton
Pritchard, Linwood E.	Camden	South Mills, N. C.	(No phone available)
Ramsey, Raymond C.	Madison	Mars Hill, N. C.	
Rivenbark, W. L.	Pender	Burgaw, N. C.	8712
Robertson, Hugh A.	Iredell	Statesville, N. C.	1289-R
Simmons, Dennis W.	Hyde	Fairfield, N. C.	182-Swan Quarter
Smallwood, W. L.	Bertie	Windsor, N. C.	2086
Spain, Herman	Pamlico	Stonewall, N. C.	883
Taylor, Oscar T.	Beaufort	Washington, N. C.	513

Taylor, Daniel M.	Buncombe	Asheville, N. C.	32770
Teel, J. O.	Pitt	Greenville, N. C.	3651-1
Terry, J. T.	Washington	Plymouth, N. C.	5441
Tipton, Perry D.	Clay	Hayesville, N. C.	25
Turlington, T. J.	Harnett	Dunn, N. C.	39407
Vinson, James H.	Hertford	Winton, N. C.	196
Ward, Marvin L.	Durham	Morrisville, N. C.	4-3462-Durham
Warrington, L. E.	Craven	New Bern, N. C.	3878
Watts, Vernon D.	Anson	Wadesboro, N. C.	311-L
Williams, Henry B.	Craven	Vanceboro, N. C.	446
Wilson, P. B.	Franklin	Bunn, N. C.	4181
Winslow, G. Eldon	Perquimans	Hertford, N. C.	3626
Withers, Joseph D.	Mecklenburg	Charlotte, N. C.	43-Matthews
Woodell, E. W., Sr.	Bladen	Dublin, N. C.	2105
Woodruff, Tom Bailey	Davie	Mocksville, N. C.	23F21
Woody, W. Earl	Cleveland	Shelby, N. C.	1392-XJ
Woolard, C. N.	Wilson	Wilson, N. C.	3
Wooten, Howard L.	Alexander	Taylorsville, N. C.	2919

apparently not affected. During this period there was a relative shortage of waterfowl food. Although starvation is not believed to be the direct cause of the death of these geese, the shortage of available food probably contributed to the weakened physical condition of the geese that were examined, and resulted in greater susceptibility to the disease. The extreme unsanitary condition which existed on the refuge during this period made conditions ideal for the direct transmission of diseases and parasites. All of the geese examined were birds less than one year of age. This may indicate partial immunity in adult birds.

1/Contribution from Pittman-Robertson Project 6-R, North Carolina Wildlife Resources Commission. The writer is indebted to: Mr. Frank R. Craig, Poultry Pathologist, Poultry Disease Laboratory, North Carolina State College, for the original diagnosis of the disease; Dr. Reinard Harkema, North Carolina State College for confirmation of the diagnosis and identification of the causative organism; Mr. Ray Allison, North Carolina Wildlife Resources Commission, for the sectionings and preparation of slides; Messrs. Rod Amundson and Jack Dermid, North Carolina Wildlife Resources Commission, for photographs and photomicrographs; and Dr. F. S. Barkalow, Jr., North Carolina Wildlife Resources Commission, for criticisms and helpful suggestions on the manuscript.

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(Continued from page 17)

In 1948 the club undertook the sale of *"Wildlife In North Carolina"* magazine for a project. We had lectures on the care and repair of firearms. We held tall tale contests on hunting and fishing. We held a casting contest and it was helpful in teaching members how to cast.

One club meeting Jack Campbell discussed a trip to the Stedman Fish Hatchery. The next week we went to the hatchery. Mr. Rollins and Mr. Campbell arranged for cars to carry us to the hatchery. There we were shown a great deal about fish by Mr. Hueske.

At the starting of the 1949 club was a promise of another successful year. We started out the year by making a wildlife float for a parade. We got a truck and put a little bit of everything on it. We had a wonderful time working on it.

The next thing we had on the program was a skeet and rifle match. This was the first skeet match to be held around Sanford in a long time. It was successful and was so well liked that we are holding a series of them.

The next thing on the program was the trip to Raleigh. Again Mr. Campbell and Mr. Rollins gave their time and assistance. So one afternoon we got out of school a half day to go. We arrived at Raleigh where we had a wonderful time as shown to us by Mr. Amundson and Mr. Donat.

We have had many more programs this year which gives us the reputation in school for having a most active club. We are going to have all out programs to teach conservation for we feel that the more conservation minded people are the more wildlife we will have.

(PHOTO BY MARGARET FISLER)

On-the-spot accounts of wildlife activities are frequent subjects of "The Tar Heel Wildlife Review." Shown at the microphone (l. to r.) are Onis Peed, Oxford, President of the Granville County Wildlife Club; Rod Amundson, MC of the program and Editor of "Wildlife In North Carolina;" Ross O. Stevens, Executive Secretary of the N. C. Wildlife Federation. The occasion was the Granville County Wildlife Club's annual turkey shoot.

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A WEEKLY PROGRAM PRODUCED BY THE WILDLIFE RESOURCES COMMISSION AS A PUBLIC SERVICE FEATURE.

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WKBC, N. Wilkesboro, Saturday, 4:45 p.m.
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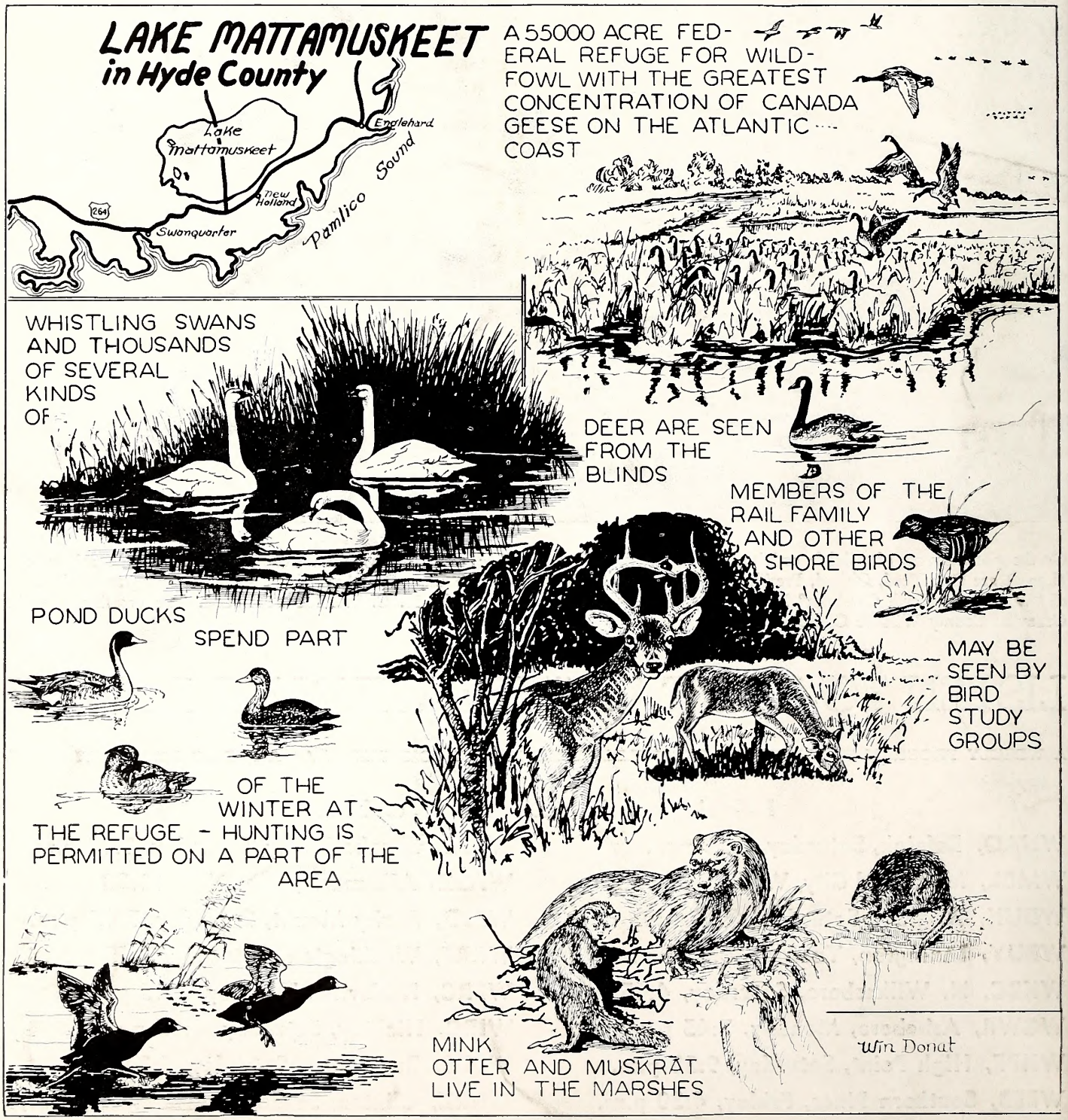

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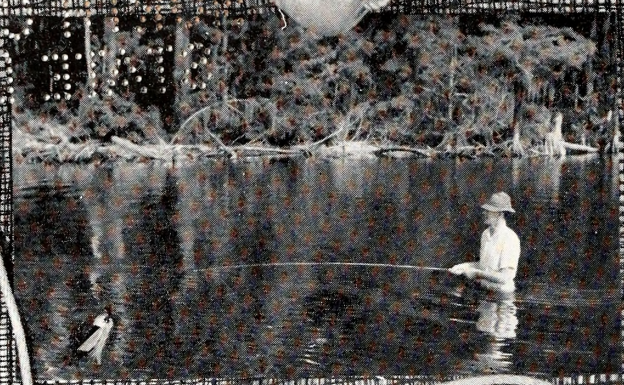

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A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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COVER

This month's cover is in keeping with Groundhog Day and the subject of the monthly wildlife feature. Few people realize the importance of groundhogs to other wild creatures.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

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Wildlife is less interested in the amount of material between its covers than in the amount of material which sticks to the minds of its readers. Our aim is to bring about a greater understanding of the problems concerned with wildlife management, and a widespread appreciation of the need for conserving our natural resources.

ROD AMUNDSON, *Editor*

LET'S LEARN ABOUT OUR WILDLIFE

The Thirteenth of a Series on The Wildlife Species of North Carolina

THE GROUNDHOG

By ROD AMUNDSON

Neither a game nor a fur animal, the groundhog is important as a housing expeditor for other small mammals.

HISTORY

"HOW much wood would a woodchuck chuck—if a woodchuck would chuck wood?"

This play on words is as old as the popular name for *Marmota monax,* the common woodchuck. "Groundhog" is the more popular name in southern states, but "woodchuck" is accepted with equal favor in North Carolina, and throughout the United States. Other common names are "marmot" and "siffleur," a French-Canadian name meaning "whistler." The groundhog is one of several wild species which have thrived with the advance of agriculture. They were once typically forest mammals, but when pioneers began clearing ground for farm land, the groundhog quickly saw the advantages of plentiful food in the form of agricultural crops, and moved to the edges of fields or even into the midst of fields where stumps of trees or rock piles afforded excellent den sites. Although subject to population cycles, groundhogs have become abundant throughout the northeastern part of the country, and in many cases have become pestiferous.

Groundhogs are not considered game animals in North Carolina, but their importance to small game species makes it imperative that they be given consideration in writing of other game.

Although the fur of groundhogs is very thick and durable, it is too coarse to be valuable to the fur industry. The Indians used to make robes from groundhog skins, but little commercial use has ever been made of them. Marmot coats are made from the European groundhog, and are of excellent appearance and durability.

As to edibility, most people do not consider groundhogs as an item of food, but those who have eaten a young, fat animal declare that the meat has an excellent flavor. The groundhog's vegetarian diet certainly should make it as good to eat as squirrels or rabbits.

Groundhog Day, which for some unknown reason occurs every February 2, might have had its origin in North Carolina. Its true origin has been lost in antiquity, but the legend persists that on February 2 groundhogs awake from their winter sleep and come out of their dens to look over the situation. If their appearance casts a shadow on snow, it is an omen of a cold late spring; if the ground is bare and the sky cloudy, the sagacious animals are supposed to forecast fair weather and an early spring. Even biologists admit the relationship between an open winter and a late spring, a cloudy, wet February and an early spring. At any rate, an unostentatious little animal gets credit for occult powers, and cartoonists, feature writers, and editors are provided with material for the day.

Groundhog burrows are intricate affairs, and provide homes for rabbits, mink, weasels, and other small mammals.

In North Carolina the groundhog is almost entirely confined to the mountain and western Piedmont counties, being almost entirely non-existent on the coastal plains. Few travelers along the Parkway in the western part of the state miss seeing these interesting animals along the road. Those with time to stop to enjoy the mountain view are rewarded with hearing their shrill whistling.

DESCRIPTION

Groundhogs are actually large groundsquirrels, and are the only members of the groundsquirrel group found in North Carolina. They are relatively large animals, with old males weighing up to 12 pounds, and measuring from 25-27 inches long. They are heavy-bodied animals, with a broad, blunt head, small ears, and small eyes. The tail is short, flattened, and bushy. The forefeet have four well developed toes which are armed with stout claws for digging. The thumb is only rudimentary. The same is true of the hind feet. Typically rodents, the teeth of groundhogs are sharp chisels which can gnaw through tough roots and chop food with almost equal ease.

Both sexes are colored alike, being a general brownish gray in appearance with black feet. The underfur is dark gray at the base and tipped with cinnamon brown. The outer hairs are brownish and tipped with light gray buff or gray, giving the animal a grizzled, hoary appearance.

CHARACTERISTICS

Since white men first began tilling the soil of America, there has been a constant battle between men and groundhogs. Despite constant persecution, groundhogs have persisted, and even increased. When efforts are made to exterminate these animals, they become sly and crafty. Rarely have they been completely removed from a locality.

Hunters like to sharpen their aim by taking pot shots at groundhogs, but few hunters would kill them if they realized how important they are to the existence of other small game such as rabbits, mink, skunks, weasels, and even foxes. Groundhogs are burrowing mammals, and there seems to be no end to the energy with which they excavate elaborate tunnels under the ground. In doing this they become a gratis FHA to other small animals. For some unknown reason, groundhogs dig new dens almost every year, abandoning the old ones to any other animal which may choose to use them. This profuse den-digging is objectionable to farmers where mounds of earth in fields interfere with farm machinery operation, or result in broken legs when hapless mules or cows step through into the cavities. Nevertheless, the dens are provident housing projects for other small mammals.

The dens, as we have said, are elaborate affairs, and may extend more than 25 feet from end to end, with a labyrinth of side tunnels and passages. The den is begun at a likely spot, usually at the base of a tree or stump, or under a rock, where the entrance will be protected from larger animals. The entrance slants downward until a depth of two or three feet is reached, then levels off or rises slightly. A nest chamber is hollowed out, often a foot wide. The den tunnel continues beyond the nest chamber, and may continue for several feet, finally terminating in a shaft dug vertically to the surface of the ground. This vertical shaft serves a number of purposes. It provides ventilation; but more important, it provides an escape hatch in case of an invasion by an unwelcome visitor. Most important, it allows the groundhog to dive headlong into the den to escape enemies, and enjoy the safety of several feet of solid ground above.

Many small boys and even grown men have been foiled in an attempt to take groundhogs by digging them out of their dens. They may frighten the animal into its burrow and dig out the tunnel from one end to the other, only to find it completely vacant. The wily groundhog had simply entered or dug a side passage, and packed the entrance so firmly with earth that it was passed by unnoticed.

Groundhogs are among the most sanitary of mammals. They dig shallow holes in the area surrounding their den in which to deposit excrement, and then bury it with a firm layer of earth. In bad weather, when the animals wish to remain in the den, they use a side tunnel for a latrine, always carefully covering their droppings with a layer of soil. From time to time the dried contents of the latrine are carried to the surface of the ground and disposed of.

Groundhogs seldom range more than 100 feet from their dens, and when startled, make a dash for the

Beautiful fur coats are made from the European cousin of the American groundhog. Above is a mink-dyed marmot coat owned and posed by Miss Mary Byrum, Raleigh, N. C.

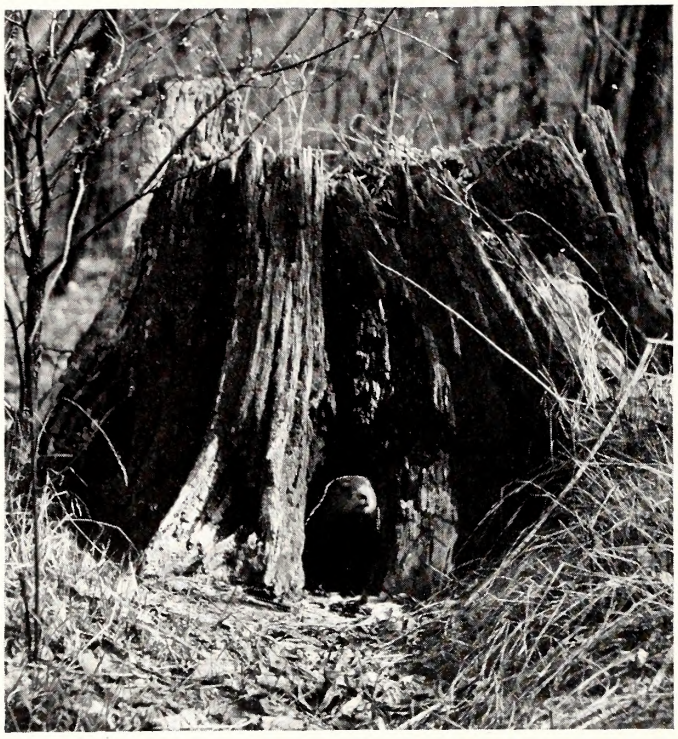


Photo Courtesy U. S. Fish & Wildlife Service

Old stumps in the middle of fields make fine den entrances for groundhogs, though farmers object to burrows and dirt piles in their fields.

vertical den opening and safety. An instant later they may be seen cautiously peering out of the other end of the den to observe the cause of the disturbance. Many a farm dog has cooled his heels at one end of a groundhog den, waiting for the animal to reappear, while the intended victim watches calmly from another entrance several yards away.

When forced into battle with a larger animal, such as a dog (no smaller animal would dare attack), the groundhog is a valiant and heroic fighter. He will fight until exhausted, feign death until rested, then renew the attack with terrific fury. Many a dog has given up the battle, thinking it won, only to find the opponent back in the affray with renewed vigor.

Like other members of the squirrel family, groundhogs are gifted with a voice and a vociferous nature. They may sit erect at the entrance to their homes and give forth a shrill whistle which can be heard for a mile on a still morning. There is some argument as to whether they have a song, such as that of the thirteen-striped groundsquirrel, but the writer has spent many an hour watching groundhogs in their native habitat, and heard them whistle a soft melodious trill. When alarmed, or when cornered, the groundhog will issue a stuttering chatter which is a warning to any would-be attacker.

Groundhogs make interesting, affectionate pets. When caught during their first few weeks of life, they may be fed milk from a spoon or eyedropper, and become so tame and affectionate that children can handle them with safety.

A specimen at a filling station at West Jefferson, North Carolina, developed a fondness for soda pop, and would gorge himself at every opportunity. Curious tourists provided plenty of opportunity. This animal loved to be stroked and petted. He shut his eyes and made a noise not unlike that of a purring kitten.

BREEDING HABITS

Groundhogs are solitary animals, and do not live in communities like their close relatives the prairie dogs. In desirable locations several individuals may set up housekeeping rather close together, but the animals respect each other's domain, and there is little trespassing.

Mating occurs in the early spring or late winter, soon after the animals come out of hibernation. From four to six or even eight young are born in late March or April. They are blind and almost helpless at birth, and do not emerge from the nest until several weeks old. They take solid food as soon as they are old enough to seek after it, and from that time on depend on the female parent only for the protection of the den and warning against approaching enemies. The male parent has nothing to do with the family life other than to sire the young.

(Photo Courtesy U. S. Forest Service)

Groundhog Day is February second. This grizzled specimen came out and saw his shadow. According to tradition he went back for six more weeks of winter sleep.

HIBERNATION

Groundhogs are one of seven types of animals which go into true hibernation. At the approach of cold weather, the groundhog has acquired an impressive layer of fat under his skin, and is thus prepared for a long winter's sleep. He repairs to his underground nest and curls up into a tight ball, with his nose buried in the lower part of his abdomen, and his tail curled over his head. His heart slows down to a pace of about seven beats per minute, and his body temperature may go down to forty degrees—the lowest temperature soil reaches

below the frost line. His breathing slows to a rate of once per minute. Thus he may spend weeks or months in inanimate solitude, his body processes consuming the fat he stored the summer before. From time to time he may come out of the stupor and venture to the outer world, only to return to further sleep.

Immediately after coming out of hibernation, the heart palpitates at abnormal speed, and breathing quickens as if an oxygen-starved body were gasping for air. This period may last for about a half hour, then normality is regained.

FOOD HABITS

Groundhogs prefer agricultural crops for food, and especially relish garden vegetables. This causes them no end of trouble. A large specimen can destroy an amazing amount of clover, peas, or beans in a single foraging expedition. The presence of a groundhog den near a garden is indeed a hazard. Small fruit trees are not immune from groundhogs, and the animals may cause severe damage to young orchards.

Their food is varied, however, and they will eat grass, certain weeds, and the leaves of trees and shrubs. Groundhogs are capable of climbing trees, but are not expert climbers. They will climb trees either as an escape device or to munch on select fruits, nuts, and berries. Pet groundhogs eat almost any kind of table vegetable, but root plants such as carrots are a favorite. They will also eat bread and milk, as well as candy and other sweets.

ENEMIES

Diseases and parasites are almost unknown to groundhogs, and their enemies, other than man and dogs, are few. Foxes sometimes outwit groundhogs and use them for a tasty dinner. Eagles and large hawks sometimes get away with small specimens, and bears have been known to dig out hibernating animals for a juicy feast. Their size, their courage, and their constant vigil against enemies make groundhogs secure in their life on earth.

MANAGEMENT

It is obvious that where groundhogs interfere with man's living, they must be destroyed; but where they live-and-let-live on the edge of a woodland, they are of extreme importance as providers of homes for small game, and for this reason should enjoy immunity from gunfire. Those who have watched them sun themselves on a hillside, or who have watched a group of youngsters engaged in a game of throwing each other down into a den, or heard their cheery whistle on a sunny afternoon, will assert the importance of these lovable animals in making outdoor life more interesting.

Photo Courtesy U. S. Fish & Wildlife Service

A young groundhog caught by the camera as he comes out of his burrow looking for food.

4-H CLUBS TRAIN 10 MILLION CONSERVATIONISTS

An amazing total of 10 million boys and girls, parents, and local leaders have participated in one or more conservation projects on their home farms since the 4-H Club conservation program, in cooperation with the Agricultural Extension Service, was introduced 16 years ago, according to the Wildlife Management Institute.

More than 5,000 boys and girls each year are awarded scholarships to state conservation camps by Mr. Charles L. Horn of Minneapolis. These young people are chosen on the basis of their participation in conservation projects in their own communities. The camps afford many advantages over the usual classroom, where teaching of conservation is apt to become abstract and verbal, by giving the youth an opportunity to get practical experience on actual projects under trained supervision.

One of the many gratifying results which have emanated from this sponsorship by Mr. Horn is the surprising number of young men and women who have attended these camps in the past and who now are occupying positions as county agents or home demonstration agents. Several have entered the fields of forestry and game management. Mr. Horn and his field representative, Mr. George McCullough, frequently hear those so engaged say, in effect: "I got the inspiration to enter college and prepare for the position I now occupy while attending a 4-H conservation camp while I was still in high school."

There are several thousand district and county 4-H Club camps in the United States and some phase of conservation now is being presented at all of them.

MUSKRAT MANAGEMENT and WATER LEVEL CONTROL

By KENNETH A. WILSON, *Project Leader*
Fur Segment, Marsh Resources Investigation
North Carolina Wildlife Resources Commission

(Paper presented to Southeastern Association of Game and Fish Commissioners Conference, Nags Head, North Carolina, November 1-2, 1949)

Constant water levels are necessary to successful muskrat propagation in coastal marsh lands. Controlling water levels is a problem to be solved before maximum production can be reached.

Although North Carolina embraces numerous rivers, several large lakes, thousands of miles of ditches, several hundred thousand acres of swamps and at least 200,000 acres of marshland, the muskrat harvest according to fur dealers' reports since 1940, has never exceeded 147,000 pelts. Muskrats, it is true, do not exist along the coast below Pamlico Sound, nor are many found in the expansive swamps, but why the remaining habitat in the state, which is considerable, is not more productive remains an unsolved problem. Doubtlessly many limiting factors are involved; overtrapping, limited food supply, lack of water or too much water, or combinations of these, to mention a few. One might ask, what then is good muskrat habitat? What constitutes basic environmental requirements? The standard answer often is: Give the muskrat plenty of food and water and it will increase in large numbers. But is the answer really as simple as that? No! If it were, muskrat investigations would not be necessary. Right now thousands of farmers and owners of marshland over the state would welcome information they could economically employ to obtain bigger muskrat yields. Vast areas of marsh along the coast never produce a muskrat; in fact, except for occasional cattle range, are useless. Tidal marshland in northeastern North Carolina represents the largest and most productive block of muskrat habitat in the state, but the approximately 34,000 acres seldom yield more than one muskrat to the acre. This, too, presents a management problem. An increase of one muskrat per acre in any of these habitats would mean increased state wealth and a bigger dollar income for the people who need it most.

This paper covers only the beginning of a study, the major objective of which is to find out what combination of food, cover, water, and other environmental influences produces the largest trappable muskrat surpluses per given acre of habitat. Equally important investigations are being conducted in the control and eradication of undesirable herbaceous vegetation like needlegrass, (*Juncus roemerianus*), sawgrass (*Cladium jamaicense*), and cordgrass (*Spartina cynosuroides*) by mowing, burning, flooding, and the use of herbicides. A major project segment covered in this paper involves investigations on the effects of controlled water levels upon muskrat populations.

The acquisition of an 800-acre tract of marsh and woodland along the Northwest River two miles east of Moyock in Currituck County by the North Carolina Wildlife Resources Commission in 1948, resulted in the establishment of the Northwest River Marsh Refuge. Construction of the Fur Animal Field Station, the first in North Carolina history, and a boat house was completed last summer. One biologist, with occasional student assistance from North Carolina State College and labor when needed, comprises the project personnel.

The marsh acreage consisting of about 400 acres is typical of low productive muskrat habitat in Currituck Sound. Cattails, all four species (*Typha glauca, angustifolia, domingensis, latifolia*), three square grass (*Scirpus olneyi*) and other good food sources are present in large to medium quantities on about 300 acres. Principal vegetation on the remaining acreage is needlegrass, sawgrass, cordgrass, and royal fern (*Osmunda regalis*). Water in the area is fresh to slightly brackish. When bought in 1948, the unit carried about 500 muskrats, numerous raccoons, some mink, marsh rabbits, deer, a

few gray fox and otter, plenty of cottonmouth moccasins and, on higher land bordering the Virginia State line, a few canebrake rattlesnakes.

MUSKRAT PRODUCTION

Muskrats inhabiting the northeastern North Carolina coast are known as the Virginia or coastal muskrat (*Ondatra zibethica macrodon*). Its range extends along the Middle Atlantic Coast Region from Delaware Bay to Pamlico Sound, North Carolina. Two color phases occur throughout its range, a black and brown. Examination of 6,668 muskrats in Currituck County fur sheds from 1947 to 1949 revealed 62 "browns" for every 38 "blacks." Higher prices are normally paid for black pelts, but to avoid confusion fur dealers usually pay a "flat" though higher rate. Proof that muskrats from North Carolina are considered good merchandise is found in the prices annually paid. The average pelt price in 1948 for 958 muskrat pelts trapped on a local marsh in Currituck County was $2.25, and with $125.10 for meat, an average of $2.38. The same year in Maine, 600 miles to the north, 475 spring pelts brought an average of $2.87. A difference of 62 cents per pelt between muskrats reared in the sunny south and the cold north woods of Maine. Prices paid to the same trappers for 617 muskrats during the 1948-1949 season averaged only $1.81 per pelt, but $158.76 received for 567 carcasses, (28¢ per animal), brought the average to $2.07. Fifty-four nice muskrats from the Northwest River Marsh, two of which weighed more than 4 pounds, averaged $2.03 per pelt. Yields in the bulk of Currituck Sound marshes range from almost nothing to two animals per acre, but in some areas of apparent optimum habitat catches up to 20 muskrats per acre and even more are made. Approximately 34,000 acres of marshland in the county normally yield an annual crop of muskrat pelts worth from $50,000 to $75,000.

LIMITING FACTORS

Overtrapping, disease, predation, limited food supplies; any of these could be the factor behind the poor yield returns from many local marshes. But what appears to be the perennial and principal limiting factor operating in Currituck Sound marshes is the year in and year out lack of consistently stable water levels. High water over the marsh one day, low water below marsh level the next, high water for weeks at a time, usually in the summer, low water for weeks and even months at a time, usually in the winter. Thousands of acres of marshland in the Northwest River section of the Sound contain immense quantities of the choicest three square grass and cattail muskrat foods, however, year after year many of these acres do not produce a muskrat and no large segments in recent years have averaged even one muskrat per acre. Nevertheless, pockets or depressions in the marsh that never go dry usually produce a substantial crop of muskrats. Trapping records from the Tice brothers' marshes, Tulls Bay, Currituck Sound, for the 1947-1948 season reveal that 103 muskrats trapped from 61 acres of marsh, 66 (64%) came from two pockets totaling 10 acres. The same year 120 acres of additional marsh yielded 237 muskrats, but 85 (36%) of them came from 14 acres or about 12 per cent of the marsh. This area also was a pocket with year 'round water. Additional examples could be cited, but they are not necessary. We all know that muskrats must have water. Just what the minimum requirements are is not known by the writer, but field observations seem to indicate that muskrats old enough to swim can tolerate marsh holding 20 inches of water much better than habitat with water levels 5 inches below the marsh. Experiments and studies in the use of wooden diking to control marsh water levels will, it is hoped, divulge this information.

Approximately 10,000 acres of almost worthless needlegrass, sawgrass, and cordgrass vegetation represent another important limiting factor in muskrat production. Experiments and studies to eradicate and replace them with cattails, three square grass and other valuable foods are being conducted now.

A wooden test dike constructed to hold water levels to a point where muskrat living conditions are produced.

INVESTIGATION PROGRAM

Most of the investigations reported upon here represent only the beginning. The big projects lie ahead. Whether some of them are initiated, however, depends largely upon the outcome of the preliminary work.

Controlling Water Levels:

Wooden diking has been successfully used for years in Currituck Sound to impound and maintain marsh pond water levels to attract waterfowl. Most diking has been constructed in sand at considerable expense. Diking established over peat marsh usually costs less, but unless dike wings are driven into the marsh on either side of the main impoundment, leaks from muskrat diggings usually occur. Wooden dikes built in 1928, on Bray's Island in upper Currituck Sound were found intact in 1949. Muskrat excavations flanked all the impoundments, none of which were holding back water, but the weathered pine boards though worn on the edges, were still sound enough to take a nail and hold water.

Methods: All dikes constructed have been made from heart pine lumber. No special equipment has been available and every dike built was put in by hand. Since most of the marsh in the Northwest River vicinity lies over 10 to 25 feet of peat, the job, in most cases, has not been difficult. All dikes were made of lumber one inch thick by 6 to 8 inches wide. Boards in most small dikes were 5 to 7 feet long, but dikes across guts more than 10 feet wide usually required material from 8 to 12 feet long. Dike construction consisted of driving down a double line of overlapping boards across the ditch or creek. Early attempts to drive down more than one board at a time failed. By sharpening boards and driving them singly with a maul, a snug watertight job resulted. The two-inch thick dike was then nailed from water level up to the top with 10-penny galvanized nails. One 14-foot wide dike was reinforced with a buffer dike (a line of one-inch boards driven 2 feet behind the main dike) and braces (in front of dike) 4 feet apart. Every dike, except one, had dike wings. Constructed of one inch material, 3-6 feet long, they perform two things; impound water and prevent the muskrat from digging holes which would drain the marsh. All of the larger dikes were equipped with spillways to facilitate draining and taking in water.

Dikes designed to impound three ranges of water levels have been established. The first—and most of these are across small guts and ditches 2 to 6 feet wide—allows high water in the marsh, but during periods of low tide holds it at marsh level. No spillway is used with this dike. The second type of dike in use also allows the entrance of high water, but impounds 5 to 7 inches. To impound this much water, dike wings 3 to 6 feet in the marsh and 8 inches up, extend several hundred feet on either side. A spillway affords drainage when desired. The third diked area, surrounded by roads and high land, keeps out creek water except during unusually high tides and the water levels in this impoundment have been kept fairly stable. This unit is equipped with a spillway also. Another dike of this type capable of keeping out all high water will be constructed when the performance of test dikes already established prove that wooden diking over deep layers of peat is practical and capable of impounding and holding water for long periods.

Results: From what we have learned, diking in tidal marshland of the Northwest River—Tulls Bay variety is comparatively simple, economical and to date all nine dikes that have been completed are holding water. Dike with the most impressive record embraces a 14 acre segment of marsh owned by the Tice brothers. Completed last October 9, 1948, it has consistently held an average of at least seven inches of water for more than a year. Three days in June, following two weeks of low tides and three weeks of no rain, water dropped three inches below marsh level, but excessive transpiration and evaporation resulting from high winds, not leakage, caused this situation. The only other dike capable of backing up water on more than ten acres of marsh is located on the Northwest River Marsh. Mistakes in construction that caused this dike to leak have been rectified. From late June, when repaired, through July and August, high water has covered the area, but since early September this dike has had several severe tests and, except for some minor leaks, without the loss of water. The records of other, though smaller, dikes have all been good.

Wooden dikes are simple and inexpensive to construct. They eliminate the use of heavy dredging or excavation equipment.

Costs: When compared to impoundments made on higher land the cost of constructing a marsh dike is small. For example: One hundred board feet of lumber and nine hours labor were required to build a dike across a 6 foot wide canal, 60 board feet went

(Continued on page 14)

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

PROSECUTION REPORTS FOR THE YEAR 1949 INDICATE THAT FISH AND GAME LAW VIOLATIONS HIT AN ALL-TIME HIGH WITH OVER 4,000 VIOLATORS PAYING NEARLY $50,000 IN FINES AND COURT COSTS. MOST FREQUENT VIOLATIONS INVOLVED HUNTING OR FISHING WITHOUT A PROPER LICENSE. AS USUAL THERE WERE SERIOUS OFFENSES SUCH AS FIRE-LIGHTING DEER, DYNAMITING, OR POISONING FISH. THE INCREASE IN PROSECUTIONS CAN BE TRACED TO TWO FACTORS: AN EVER-INCREASING NUMBER OF HUNTERS AND FISHERMEN, AND IMPROVED METHODS OF LAW ENFORCEMENT. TWO-WAY RADIOS, SPEED BOATS, A PATROL PLANE, PATROL CARS, AND MORE EXPERIENCED LAW ENFORCEMENT OFFICERS UNDOUBTEDLY BROUGHT ABOUT THE APPREHENSION OF A GREATER PROPORTION OF THE VIOLATORS.

FOLLOWING A TREND OF THE PAST FEW YEARS, TAR HEEL ANGLERS AND NIMRODS WILL TAKE TO THE FIELDS AND STREAMS IN 1950 IN EVEN GREATER NUMBERS THAN BEFORE. THE INCREASE IS ALREADY REFLECTED IN INCREASED LICENSE SALES. THIS MEANS A GREATER DEMAND ON OUR WILDLIFE RESOURCES CONCURRENT WITH AN EVER-SHRINKING AMOUNT OF SUITABLE HABITAT. COMBINED, THE TWO FORCES MAKE SOUND WILDLIFE MANAGEMENT ALL THE MORE IMPORTANT.

FINAL SCRIPTS ARE BEING CONSIDERED FOR A MOTION PICTURE FILM WHICH IS TO BE PRODUCED BY THE STATE AGENCIES WHICH MAKE UP THE RESOURCE-USE EDUCATION COMMISSION. THE FILM WILL DEPICT THE DEVELOPMENT OF NORTH CAROLINA'S STANDARD OF LIVING, AND THE RELATIONSHIP AMONG THE STATE'S RESOURCES. IN CONNECTION WITH THE MOTION PICTURE IS A 13-PROGRAM RADIO SERIES WHICH WILL BE AIRED ON KEY STATIONS OVER THE STATE TO FURTHER TELL THE STORY OF THE NEED FOR PROPER USE OF OUR NATURAL RESOURCES. DATES FOR RELEASING THE FILM AND RADIO PROGRAMS WILL BE ANNOUNCED LATER. THE COMMUNICATIONS CENTER AT N. C. UNIVERSITY, CHAPEL HILL, IS ACTIVELY CONCERNED WITH THE RESOURCE-USE EDUCATION PROGRAM.

JANUARY 31 MARKED THE CLOSE OF THE 1949-1950 HUNTING SEASON IN NORTH CAROLINA. HUNTERS WHO STILL WANT TO KEEP THEIR SHOOTING EYES IN FORM WILL GO IN FOR CROW HUNTING OR TRAP SHOOTING. THE TROUT SEASON OPENS APRIL 15. SPECIAL REGULATIONS ON WILDLIFE MANAGEMENT AREAS WILL BE PUBLISHED IN THE NEAR FUTURE.

Patrolmen spot a violation and radio an alert to other men working in the area.

POACHER B

YOU CAN'T LANE BOATS, AN Y RA

The patrol plane pilot is br -minu a law-enforcement supervis life pa districts and in close coo super officers.

(Photo)

Maps and charts are used to plan over-all strategy from the central office in Raleigh.

H BEWARE!

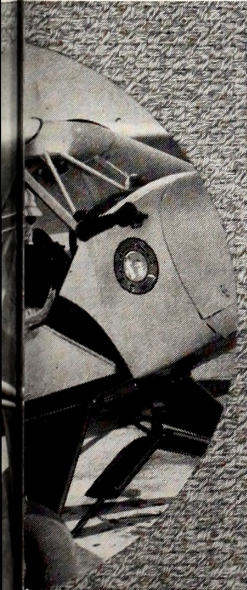
T PLANES, SPEED AY RADIOS!

Portable 2-way radios and powerful binoculars extend the arm of fish and game law to important distances, making the going extremely difficult for violators.

Below is an example of what can be seen through binoculars. Although the hunter in the tree was within the law, a poacher would loom just as large in the lenses.

is last-minute instructions by erwildlife patrol works in all cough supervisors and local

(Photo ler)



Rising and falling water levels can flood or drain muskrat houses, and thus reduce muskrat production. This house is on nearly dry land.

into the dike and 40 board feet was used to build the dike wings. Cost of lumber, $8; labor, $9; with a total cost of $17. Another dike 16 feet wide with lumber for 12 feet of wings included took 240 board feet of lumber and 31 hours of labor to complete at a cost of $49. Total cost, expense of dike wings included, about $3 per lineal foot of dike.

Effects upon muskrat populations: Muskrat house counts and close scrutiny of the diked areas last fall and winter revealed what appeared to be heavier muskrat populations on most units but, if true, bigger yields should have resulted and, except for one segment of marsh, they did not. The rat harvest in many Currituck marshes was down last year, however, and in the Tice marshes production fell off 36%. A few months hence we will be better able to evaluate the effects of year-round diking on muskrat populations.

Controlling Vegetation:

Very little is known about the plant ecology of Currituck Sound tidal marshes. Marginal zones between woodland and marsh are continuously changing and building up the forest area. The process is slow, but each year the marsh acreage shrinks. The direction of plant succession in Northwest River marshes appears to be from three square grass—cattail associes to pure stands of needlegrass—sawgrass. Absence of fires and the year after year accumulation of rank vegetation accelerate the trend toward woody vegetation.

Investigations into means of eradicating undesirable climax marsh vegetation have been in progress about 20 months. Most of the early work was done with burning, followed by experiments in mowing and herbicides.

Burning: Late winter-early spring burns in climax vegetation permit rapid growing three square-cattail vegetation to get a new grip in habitat they are gradually losing, but except for a thinner appearance and where late spring burns have precluded florescence, needlegrass-sawgrass-cordgrass vegetation have shown no ill effects. If this vegetation could be burned hard every year, it might be eradicated but attempts to do so have failed. Burning, however, cleans a marsh of "roughs" and accumulated organic matter, slows its building up, which doubtlessly retards the invasion of the plants. It is, therefore, a good management tool, but in forested areas should be used judiciously. Where diking facilities are available, burning followed by flooding appears to be the cheapest, easiest, and most effective way to rid a marsh of climax vegetation. Last spring, experiments conducted along these lines in sawgrass-needlegrass vegetation resulted in mortality ranging from 75 per cent to complete eradication. Next year all marsh in the big diked areas will be burned early and flooded.

Mowing: Mowing experiments conducted in climax vegetation on the Northwest River Marsh have not shown much lethal promise. Preclusion of inflorescence and thinner stands resulted in most strips but inventories made in June 1949, revealed increased growth and more plants in every mowing.

Mowed plots inundated by 6 to 20 inches of water produced a different story. A total of eight strips was established in the diked areas and ranged from 12 feet wide to 30 and 50 feet long. Five needlegrass plots mowed during June and July and flooded with 6 to 20 inches of water (only 2-4 inches of water over top of stems most of this time, however,) for 70 to 90 days showed mortality ranging from 90 to 100 per cent. Four plots contained good stands of water smartweed (*Polygonum punctatum*) and spike rush (*Eleocharis palustris*) some three square grass and a few cattails (*Typha domingensis*). The fifth plot showed almost no vegetation; one water lily (*Castalia odorata*) and one muskrat-cut stem of pickerel weed (*Pontederia cordata*). Two cordgrass strips supported numerous spike rush, a few cattails (*Typha domingensis*) and about 200 stems of narrow three square grass (*Scirpus americanus*). Practically a 100 per cent kill was obtained. One sawgrass plot showed no surviving plants, but instead a dense stand of pickerel weed. A ninth mowed strip of needlegrass made during July in undiked marsh revealed 80 per cent mortality, numerous plants of sweet flag (*Acorus calamus*), a muskrat food, and spike rush. Four to 20 inches of water covered this cutting about 50 days.

Herbicides: During August and September 1948, 28 herbicide plots 10 feet square were laid out in needlegrass-sawgrass-cordgrass-reed (*Phragmites communis*) vegetation. Half were mowed, half unmowed and each had a control plot. Sodium arsenite in liquid form was used at a ratio of 1:5 in water with Vel and soap wetting agents on a relatively dry marsh. Results tabulated in June 1949, showed heaviest plant mortality in unmowed plots and the following average kill percentages:

Needlegrass	mowed, 69%;	unmowed, 82%
Sawgrass	mowed, 34%;	unmowed, 75%
Cordgrass	mowed, 38%;	unmowed, 79%
Reed	mowed, 46%;	unmowed, 37%

Reed was affected the least, needlegrass the most and unmowed plots gave best results in all the treated vegetation except reed.

Last spring and summer more sodium arsenite, King-O-Cide and A. M. C. C., two new formulas, were sprayed on 14 additional plots in needlegrass, sawgrass, and cordgrass vegetation. Next spring several more herbicides will be introduced and about three times as many plots established.

SUMMARY

The following summarizes the principal items of discussions:

(1) Despite what appears to be extensive muskrat habitat over the state, greatest number of pelts trapped in recent years has been only 147,000.

(2) The 34,000 acres of Currituck County tidal marshland annually produces between 30 and 40 thousand muskrat pelts worth between $50,000 and $75,000.

(3) Principal limiting factor in muskrat production believed caused by extreme and irregular fluctuations in water from wind tides and the lack of stable water levels. The 10,000 acres of foodless needlegrass-sawgrass-cordgrass marsh is a limiting factor also.

(4) Investigations with dikes impounding three ranges of water levels:

(a) Dike allowing entrance of high water, but holding water at marsh level.

(b) Dike allows high water in, but holds receding water 5-7 inches over marsh.

(c) Diked marsh holding stabilized water level year-round—tidal water taken in only when needed.

(5) Test dike built in October 1948, has held average of 7 inches of water for year without apparent leakage.

(6) Test dike in Northwest River Marsh held 5 to 7 inches more water than outside marsh through most of September.

(7) Burning an effective means of prolonging life of marsh, but in Northwest River marshes it does not control or eradicate undesirable vegetation. Burning and flooding needlegrass-sawgrass types resulted in 75% to complete kill.

(8) Mowings of needlegrass-cordgrass-sawgrass vegetation followed by flooding resulted in high to complete mortality in every plot. Mowings on dry marsh control vegetation temporarily, but do not kill.

(9) Liquid form of sodium arsenite sprayed on 28 10-foot square plots of needlegrass-sawgrass-cordgrass-reed resulted in mortality ranging from 23% to 91% in unmowed plots and 12% to 70% kill in mowed plots. Reed affected least.

COMMENTS

A glimpse at the work accomplishments of the past two years shows most everything in its beginning, no objectives realized but a general forging ahead. Investigations on the effects of controlled water levels upon muskrat production have not revealed much light on the latter, but of the former promising strides have been made toward what I believe to be a fact; that wooden diking, or sheet piling as it is often called, will hold back water in tidal marshland of the boggy-peat variety in the Northwest River area on Currituck Sound without any apparent or visible loss from underground seepage or leakage. If the dikes continue to hold water, and there is no evidence or reason to believe they will not, this fact alone should be good news for muskrats and waterfowl. Many natives, however, do not share this optimism (do not believe holding water in marsh will benefit muskrats), but even if they did, one thing is certain. Diking at its best in Currituck Sound will always be largely limited to small creeks and guts or ditches in the marsh; waterways removed from agricultural lands. But in the Northwest River section alone there are hundreds of sites for small dikes of the 4 to 10 feet variety and doubtlessly additional hundreds of similar spots in other sections. If management investigations with the muskrats prove successful, all of these areas will be available. According to Cottam, there are approximately 625,000 acres of tidal marsh on the Atlantic Coast from Maine to Virginia. During the 1930's more than 30,000 miles of ditches dug under the guise of mosquito control ruined large sectors of marsh for muskrat and waterfowl. Quite conceivably then with the "know how" of the North Carolina diking studies, similar work could be done on the marshes of at least seven states along the coast with multiple benefits for all—muskrats and waterfowl included.

This wooden dike prevents tide water from rushing into a marsh to flood muskrat houses, and exerts opposite effect at ebbing tide.

WHY TEACH CONSERVATION?

Common Sense Use of Our Resources is a "Must" Subject if Our Nation Is to Maintain Its Leadership

By Lunette Barber

Youngsters are eager and enthusiastic students of conservation. They will be next year's citizens, and inherit the resources we leave to them.

It is becoming an evident fact that such social attributes as "thrift," "moderation," and the overworked words "common sense" have been losing prominence in our American way of life. This is particularly true when we view the American scrap pile and see the wasteful practices it represents. Our ancestors, living in an era of abundance beyond the wildest imaginings of man, forgot their frugality in the wild scramble to exploit this seemingly inexhaustible bounty. It is the story of the grasshopper and the ant all over again, particularly with respect to the natural resources upon which our very national existence and international position depend. We, like the grasshopper, have been living on a day to day philosophy, making no provision for the future.

The day of reckoning will soon be at hand when we as individuals, members of states and the nation must stop, look and listen to the conservation philosophy which even now is not much more than a voice crying in the wilderness. We Carolinians and Americans, you and I, not some future generation, but now, today, must heed the signs of the times and begin at the beginning by literally throwing out these misconceptions. First to go should be the idea that there are no limits to our natural wealth. Unless this misunderstanding can be replaced by enlightenment, the threat to the *individual* and even to the *nation* will become a reality. The surest and most effective way of getting the average citizen to understand the principles and practices of conservation of our natural resources—soils, waters, forests, minerals, and wildlife—is to teach conservation in the public schools, especially in the grammar grades. One may ask why promote conservation education there? The reason is the same as for any other teaching: to train our youth to become good citizens, which is the purpose of all teaching; to encourage our young people to learn what has happened to our natural resources because of the lack of conservation; to convince the pupils that conservation is an individual social responsibility; to show that conservation involves the preservation of the nation's greatest financial investment; to make our boys and girls realize that conservation opens to them an opportunity for a richer life; to teach an active appreciation of our natural resources and their practical values, and a desire to manage them wisely; and last but not least, to offer as much training in conservation to children as early as possible because many, many children leave school before finishing high school and are never conscious of the fact that conservation is definitely an individual responsibility.

One may ask how to teach conservation in school without adding an extra course to the curriculum. Conservation education can be integrated with the entire school program and correlated with each subject matter field so as to become significant to the pupils and result in proper perspective. This consideration is so important that separate courses should not be encouraged because only a few pupils are reached through separate courses, and too, such courses would require a specialized staff. If desired, courses in the conservation of natural resources may be offered in the high school when conservation education has been an integral part of the preceding program.

The question may be asked, "Where shall conser-

vation education begin and with which resource?" It is well known that children are never too young to begin to learn something about our natural resources and that wildlife is of outstanding interest to them because they are constantly in touch with animals and birds, and if conservation of the things that they are interested in is taught, it is an easy matter to teach conservation of all natural resources.

Below is an outline which was worked out by a grammar grade teacher who correlated wildlife conservation with other subjects and obtained very effective results with very little effort on her part:

SUGGESTED AIDS THAT MAY BE USED IN TEACHING WILDLIFE CONSERVATION IN THE VARIOUS SUBJECTS FOR A JUNIOR WILDLIFE CLUB AS AN ACTIVITY IN THE GRAMMAR GRADES

I. ENGLISH

1. Parliamentary procedure
2. Election of officers (Rotate officers—more children get experience in presiding)
3. Record keeping
4. Oral English
5. Business English
   a. Children order information, materials, aids
6. Composition and biography
7. Poem composition
8. Keeping bird calendar
9. Friendly letters
   a. Children correspond with other club members
   b. Write formal invitations to programs, to see exhibits, etc.
10. References:
    a. **COMPTON'S PICTURED ENCYCLOPEDIA**
    b. **WORLD BOOK**
    c. **BASIC SCIENCE EDUCATION SERIES,** published by Row, Peterson and Company
    d. Magazines:
       (1) N. C. Education
       (2) Wildlife in N. C.
       (3) Nature
       (4) National Geographic
       (5) Audubon
       (6) Natural History
       (7) Junior Natural History
       (8) Canadian Nature
       (9) National Outdoor Magazines
           (a) Sports Afield
           (b) Field and Stream
           (c) Outdoor Life
    e. Other aids
       (1) Recordings*
           (a) American Bird Songs
           (b) Voices in the Night (frogs)
       (2) Album: Audubon's Birds of America*
       (3) Guides:
       (a) Our Wildlife and Its Wise Use*
       (b) Important Food and Game Fishes of N. C.

II. GEOGRAPHY: NORTH CAROLINA AND WORLD

1. Latitude and longitude
2. Rainfall and temperature
3. Seasons
4. Ocean, Rivers, Lakes, Sounds, Bays, Inlets, Capes, etc.
5. Lowlands, Plateaus, Mountains
6. Wildlife Management Areas of N. C. (Map making)
7. Migration (flyways)
8. Locations of homes of birds and animals—permanent and migratory.

III. HANDICRAFT

1. Making bird boxes, feeders, nesting baskets, bird baths, squirrel kegs, raccoon dens, etc.
2. Making aprons, pillow cases, hand towels, samplers, pot holders, kerchiefs, etc.
3. Framing hand-drawn pictures
4. Making samplers

IV. ART AND DRAWING

1. Coloring birds, trees, flowers and animals
2. Drawing originals
3. Making scrapbooks
4. Hand-painted scarfs
5. Notebooks, posters, charts
6. Exhibits
7. Decorating glass and chinaware
8. Making friezes

V. SCIENCE

1. Types of animals and birds and fish—game and non-game
2. Homes of animals, birds, and fish
3. Food of animals, birds, and fish
4. Life history of animals, birds, and fish

VI. WILDLIFE CONSERVATION AIDS

1. Wildlife Management Areas of N. C.
2. National and State Parks of N. C.
3. Sanctuaries of N. C.
4. Laws of Protection and Management
5. Local feeding and protection grounds
6. Making sanctuaries on
   a. School and college grounds
   b. Cemeteries
   c. Reservoirs and other desirable places.

***AMERICAN BIRD SONGS AND VOICES OF THE NIGHT** may be ordered from the American Nature Association, 1214 Sixteenth Street, N. W., Washington, D. C.

***AUDUBON BIRDS OF AMERICA** may be purchased at reliable book stores.

***OUR WILDLIFE AND ITS WISE USE** and **IMPORTANT FOOD AND GAMES FISHES OF NORTH CAROLINA** may be ordered **free** for teaching purposes from the North Carolina Wildlife Resources Commission, Raleigh, North Carolina.

"Once they are gone, the trees and the grasslands and the clean bright water, the screaming wildfowl, the beaver and antelope, we can only remember them with longing. We are not God; we cannot make America over again, as it was in the beginning. But we can come to what is left of our heritage with a patriot's reverence."—Donald Culross Peattie.

WILDLIFE CONSERVATION EDUCATION IS BEING PROMOTED

One hundred thirty-one Junior Wildlife clubs have been organized in the public schools of North Carolina with a membership of 5,200, which are in 27 different counties since September, 1949.

The owl cannot move its eyes in their sockets but compensates by being able to rotate its head in a large arc of 273 degrees. Like other birds, the owl possesses good color vision.

* * *

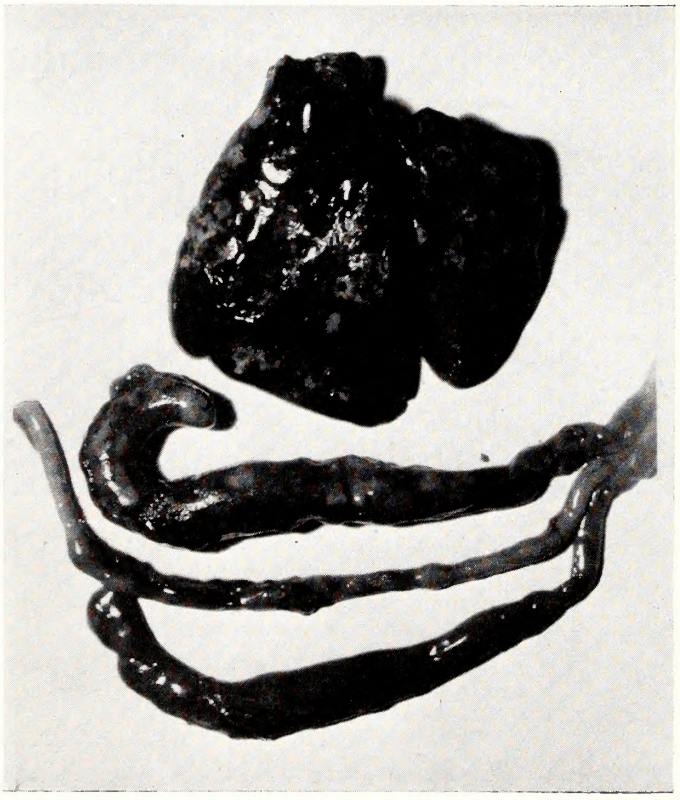
There are more than seven thousand different kinds of ants.

BLACKHEAD IN WILD TURKEYS

On Free Range in North Carolina

By
FRANK R. CRAIG[1/] AND FREDERICK S. BARKALOW, JR.[2/]
Photos Courtesy Poultry Dept., N. C. State College

Blackhead or enterohepatitis is a common disease of domestic turkeys, caused by the one-celled animal (protozoan), *Histomonas meleagridis*. Stoddard (1935) noted this disease among wild turkeys living a free life in the wild and it seemed as potentially dangerous to them in the wild as in captivity. He examined one bird in 1933 and three in 1934 from the heaviest stock range of the Thomasville section of Georgia, which were found either dead or so weakened as to be easily captured by hand. All four had typical cases of blackhead.

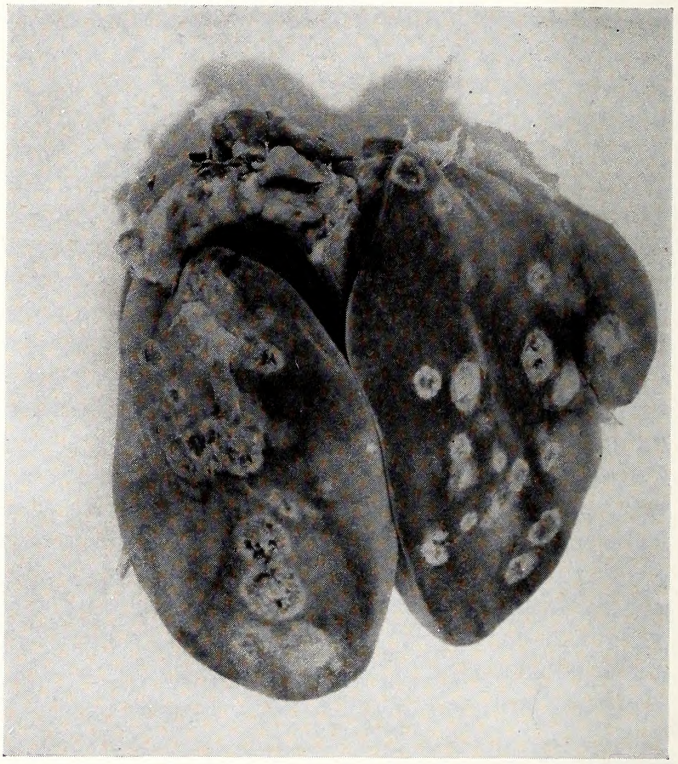


The liver and caeca of a wild turkey hen. Note spots on liver and ulcers on caeca. (Figure 1)

Mosby and Handley (1943) reported the death of an occasional poult and several adult wild turkeys from their captive brood stock in Virginia. Most of the deaths from blackhead in adult birds occurred in the late spring and early summer. It appeared to be aggravated to decimating conditions by the stress of the breeding season. The disease was believed to have been introduced into the brood stock through turkeys obtained from the Virginia State Game Farm in 1935. Turkeys from that source had suffered extensive losses from blackhead.

Mosby and Handley (*ibid.*) also reported that blackhead had been found in three native wild turkeys in Virginia. All three were gobblers—one yearling and two adults. The two adults were collected in 1940, near Wealth, Buckingham County, and the young tom was picked up in December in Prince George County.

During the fall of 1948, a total of five wild turkeys were found dead or dying on the Roanoke River, near Tillery, Halifax County, North Carolina. All of the sick birds were reported to have had a yellow

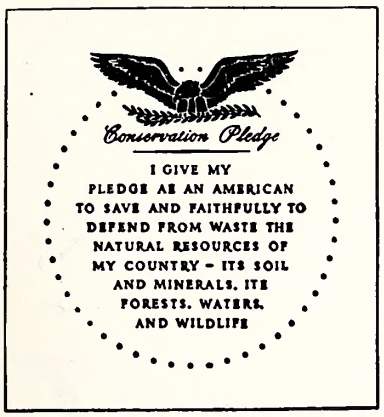


Infected liver from a domestic turkey. Note large ulcerated areas. (Figure 2)

discharge from the vent. None were able to fly, and they ran with difficulty. On stopping they would fall over or stand with their heads down.

One of these birds, a female weighing six pounds and ten ounces, was found about ten o'clock on the morning of November 9, 1948. It was reported in a very weakened condition and unable to fly. Death occurred about one o'clock on the same day. The age of the bird was estimated to be slightly less than nine months. The carcass was submitted to the disease laboratory of the North Carolina State College

(Continued on page 19)



THE CONSERVATION PLEDGE

Every thinking American should learn this pledge and practice its philosophy.

America's Conservation Pledge, a 30-word creed defining the term "conservation" and calling the attention of all to the necessity for preserving our remaining natural resources, is now in its third year of service to the nation. The Pledge had its origin in a national competition, with $5,000 in prizes, sponsored by OUTDOOR LIFE magazine in 1946.

Details of the contest were carried by the national press and radio as a public service. Officials of the federal and state governments actively support the competition by helping to publicize it in schools, among sportsman's clubs, and elsewhere.

More than 15,000 entries were received during the contest—an amazing response in view of the fact that each person who submitted a Pledge was also required to write an essay on the necessity for conservation. The selection of the winning Pledge was made by a distinguished board of public officials, conservationists, educators, and scientists. Their names follow:

David A. Aylward, President, National Wildlife Federation

Dr. Hugh H. Bennett, Chief, U. S. Soil Conservation Service

J. Hammond Brown, Director, Outdoor Writers Association of America

Paul Clement, President, Izaak Walton League of America

Dr. Ira N. Gabrielson, Director, U. S. Fish and Wildlife Service

A. C. Glassell, President, Ducks Unlimited

P. J. Hoffmaster, President, International Association of Game, Fish, and Conservation Commissioners

Karl E. Mundt, Member of Congress

Dr. Thomas T. Read, Vinton Professor of Mining Engineering, Columbia University

W. S. Rosecrans, President, American Forestry Association

F. L. Schlagle, President, National Education Association

Frederic C. Walcott, President, American Wildlife Institute

Dr. Ray O. Wyland, Director, Division of Relationships, Boy Scouts of America

The winning Pledge was written by L. L. Foreman, of Sante Fe, New Mexico.

February 5 is Conservation Pledge Day. We urge that school teachers, club leaders and others interested in conservation build a conservation program around this theme.

(Continued from page 18)

Poultry Department on November 10 where a post-mortem examination revealed the presence of yellowish, slightly depressed, necrotic areas on the liver and an ulcerative inflammation of the thickened cecal walls. (See figure 1.) A distinct sulphur-colored discharge from the vent was also observed. A clinical diagnosis of blackhead was made on the basis of these pathological changes that are typical of the disease. These lesions appeared to have the same characteristics as those seen in domestic turkeys affected with blackhead. (Figure 2.) No attempt was made to isolate and identify the organism causing the disease due to the length of time the bird had been dead.

The young hen brought in for examination *resembled a pure wild turkey (*Meleagris gallopavo silvestris vieillot*) showing no evidence of domestic blood. All reports obtained indicated that no pen-raised "wild turkeys" had been released in this area this year and no domestic turkeys range in the general vicinity.

As far as known, this is the first case of blackhead reported from wild turkeys on free range in North Carolina.

1/Assistant Poultry Pathologist—N. C. State College, Raleigh, N. C.
2/Professor of Zoology—N. C. State College, and Leader of F. A. Project 26-R, N. C. Wildlife Resources Commission, Raleigh, N. C.

* Phenotypical resembled.

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I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

In educational work such as ours we sometimes find it difficult to feel encouraged. The problems and the size of the job to be done often overshadow our efforts and we sometimes wonder if we are making the most of our opportunities. It is with considerable pleasure, then, that we derive encouragement from the following paragraph quoted from a speech made by Mrs. E. M. Anderson of West Jefferson, N. C., president of the North Carolina Federation of Women's clubs:

"Here in North Carolina let us consider our natural resources of minerals, soil, forests, water and wildlife. What do we know about them? What is being done to assure us that they are used wisely, not wastefully. Let's study the local and state needs in the conservation of natural resources and then begin at the local level to do something about this. Your best channel may be through your schools or some type of beautification project . . . How joyfully we sing 'America the Beautiful' — but merely singing will not keep it that way. As club women we should give more than lip service to the conservation pledge."

This is a significant thought coming from the leader of the State's most progressive women's organization; we hasten to add that the Education Division of the Wildlife Resources Commission is not only ready and willing, but able to cooperate in a project for conservation education.

Dear Sir:

I was reading in the last magazine in outdoor notes about the black duck that was ten years old. I have a story about a mallard drake you might be interested in.

Mr. Walter Barber of Asheville, Route 3, Box 670, has a mallard drake that was 14 years old last spring. He ordered some mallard eggs in 1935, and hatched them under a chicken hen. Great horned owl and foxes killed all of them but one drake. I gave him a year old Pekin duck last spring and she set on 12 eggs and hatched them, but a fox caught all of them in one night. She set again and hatched 4 ducks that got by, three of them look like mallards and the other is white. The drake will be 15 years old in the spring, but he is awful proud of his family.

Sincerely,
VARD GREEN
Refuge Protector
Pisgah National Game Preserve

Mr. Green's comments make us wonder if there are any other Tar Heel waterfowl fanciers who may have ducks older than the ripe age of fifteen years. The keeping and private rearing of waterfowl is legal, by the way, only with special permits obtained from both the U. S. Fish and Wildlife Service and the N. C. Wildlife Resources Commission.

A VOICE FROM THE PAST

"Though large herds of deer do much harm to the neighborhood, yet the injury to the morals of the people is of more moment than the loss of their crops. The temptation is irresistible; for most men are sportsmen: and there is such an inherent spirit for hunting in human nature, as scarce any inhibition can restrain. Hence, towards the beginning of this century all this country was wild about deer-stealing."

This was written about 1780 by Gilbert White in his book, *The Natural History of Selborne.*

Tiny green plants called algae grow on the fur of the sloth, a South American animal that lives in trees. These plants provide camouflage for the sloth.

Barcelona, Spain
December 15, 1949

Wildlife Resources Commission
Box 2919
Raleigh, N. C.
Gentlemen:

Having become acquainted through the medium of reviews and films with the magnificent organization which you Americans have set up for the pastime of hunting and fishing in North Carolina as well as in South Carolina, I would greatly appreciate your informing me or sending me some publication dealing with your system of fishing with a pole (cane). Also, I would appreciate your furnishing me the address of some fishing club or of some individual with whom I might carry on a correspondence about this pastime.

With deepest appreciation for any trouble which this request may occasion, I am your attentive servant

Who shakes your hand (Yours very truly,)
Alejandro Perez Romeu.

Some of you fishermen who would like to start up a little correspondence with this Spanish Waltonian can get his address by writing to this department. Sometimes we wonder how much of our hunting and fishing story is carried to other countries via "The Voice of America." Fishermen know the true meaning of Democracy.

FARMING FOR WILDLIFE

By RICHARD B. TURNER

THOUGH wildlife is a perishable resource it is one which naturally propagates an annual crop if given the proper opportunity. The wildlife crop is usually good or bad in proportion to the provisions which farmers and landowners make in farming and land management programs. A prolific crop is mainly a matter of combining protective vegetation and food bearing plants year around in a well planned project.

Farmers and landowners who because of lack of time or money cannot carry out a program of planting for and conserving wildlife might find that sportsmen or hunting clubs will aid in such projects.

The following approved methods, if properly carried out, will reward the farmer, sportsman, and landowner with abundant wildlife for food and sport. Also, these programs benefit the farmer financially.

Utilizing tobacco plant beds for food patches has met with great success. Because these beds are usually well dispersed over the farm and are located close to thickets and woods or other types of cover, food planted in them is available to wildlife that would not venture to unprotected areas. Most tobacco beds are well fertilized and when planted with red top cane, millet, soybeans, cowpeas, or lespedeza, produce plenty of food for wildlife. Since the bed sites are often abandoned after one year, the fertilizer doesn't go to waste if food patches are sown. A valuable wildlife plant such as sericea lespedeza, which reseeds itself readily, is excellent for tobacco bed planting.

Unharvested strips of food, particularly near wooded areas, hedgerows or thickets, offer another excellent source of feeding grounds for wildlife. This practice involves little expense or trouble. In leaving such strips the important point to remember is that well located small plots are better than improperly placed larger areas.

Recently while hunting on a friend's farm I was amazed at the large amount of quail. The answer, my friend advised, was the steady practice of leaving unharvested grain for consumption of game birds. There I saw a concrete example of planning for wildlife.

Saving den trees is another method of assuring a home for fur-bearing animals. Raccoon, opossum, fox, mink, and other fur-bearers are valuable as a source of extra income for the farmer. Preserving shelter and providing food for these animals make them more abundant in protected areas. This means money for the farmer and landowner. Furs in good condition find a ready market and to assure a large supply of fur-bearers is to assure extra income.

Unproductive field borders, because of shade from nearby trees or competition from roots, are fine feeding grounds for birds and animals when planted with good food bearing plants. One method is to cut a strip about 10 by 20 feet along the edge of a wooded area. The firewood obtained will usually pay for the trouble. These cleared plots may be planted with bird food and cover plants. The annual lespedezas are good because they adopt themselves to adverse conditions, prevent soil erosion, and do not require extensive care.

A well planned program of preparing for and conserving wildlife will assure a good crop. Abundance of birds and animals will increase the pleasure of hunting for the farmers, provide an excellent source of game food, and benefit the land by preventing erosion and general deterioration.

No doubt in many cases the farmer can obtain help from sportsmen and hunting clubs who are willing to pay for hunting privileges on farms and land where a good wildlife program is maintained, thus providing another source of extra revenue. A farmer friend told me that after a wildlife project had been carried out on his farm for three years he averages taking in over $150 dollars each year from sportsmen, hunting clubs, and sales of furs. He expects to double that amount before long. Extra income from these sources can provide those extra luxuries for the farm as well as increased pleasure in hunting and *eating* game.

CATAWBA COUNTY NOTES

PRIZES ANNOUNCED IN MEMBERSHIP CONTEST

Prizes to be given to the lucky club members who secure the most new and renewal members for the club before the closing date of the contest on April 1, 1950, have been decided upon and secured. First prize will be a 22 calibre Winchester Model 74 automatic rifle; second prize, an Actionrod casting rod; third, a Rainbeau HCH double tapered silk fly line; fourth, a pair of Rayban sun glasses; fifth, a Swiss army pocket knife.

In addition to the prizes given for securing the most members, first and second prizes will be given to those who secure the most subscriptions to the magazine *Wildlife In North Carolina*. The first prize will be a Sport King casting reel; second prize, 100 yards of 18 lb. test Rainbeau casting line.

The club president, vice-presidents, secretary, and chairman of the membership committee are not eligible for any of these prizes.

The club is indebted to the Rainbeau Mfg. Company for the two lines given as a donation. The Zewo Products Company of New York donated the Swiss army knife; Montgomery Ward, the Sport King reel; Dr. Alan Bisanar, the Rayban sun glasses. The rifle and rod were secured at wholesale price from the Hickory Sporting Goods Company.

Let's all get out and bring in the members. Any one of these prizes is well worth winning.

COMMITTEE APPOINTMENTS MADE BY PRESIDENT REESE

The following committee appointments have been made. Bass Rearing Committee: Grover Honeycutt (chairman), L. M. Bowman, George Sumpter, Bob George, Scott Hanna, E. W. Walton, Charles D. Propst, D. G. Frye, Blake Honeycutt, John H. Sigmon. Membership Committee: Robey Houck (chairman), Luther Sigmon, Arthur Hoffman, F. G. Frick. Puppy Trials Committee: Arthur Hoffman (chairman), Horace Isenhower, Fred Whisnant. Trout Committee: M. E. Rink (chairman), Charles A. White, B. K. Lineberger, P. A. Setzer, Spurgeon Phillips. Dr. Marshall Barringer has been appointed to investigate the possibility of establishing a club nursery for production of multiflora rose and bicolor lespedeza plants.

"JOE BEAVER" **By Ed Nofziger**

Forest Service, U. S. Department of Agriculture

"Are these the trees for tomorrow you were telling me about, Pop?"

KEEP NORTH CAROLINA GREEN!

Forest fires take an annual toll of valuable timber and valuable wildlife. Most fires are caused by human negligence and carelessness. Remember, only you can prevent forest fires!

Photo by Margaret Fisler

Above are some of the black bears taken by hunters in the vicinity of Lake Waccamaw last fall. The photographer persuaded cold storage plant workers to take them out of the cooler and line them up against the wall to get this unusual picture. All but one (fourth from left) had been frozen solid.

The Three Bears–Plus . . .

"Once upon a time there were three bears; then there were three more, and three more, until a lot of bears were placed in cold storage." Bear hunters around Lake Waccamaw had one of the best seasons in years last fall. They took one of the biggest ever killed in eastern North Carolina. The big black bruin weighed 558 pounds (See center above). It took a whole crew of hunters to bring him in.

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Wildlife
IN NORTH CAROLINA

TEN CENTS MARCH 1950

(Photo by E. P. Haddon, U. S. Fish & Wildlife Service)

These white-tail deer were photographed in Montana. Note how they have eaten all of the leaves and branches from the bases of the trees. The white hairs on the underside of the tail are the trade-mark of the white-tail deer.

Deer are North Carolina's most important big game animal, and present an important game management problem. An over-abundance of deer can be as dangerous as an extreme scarcity. When deer become too numerous they may destroy their food supply so that starvation and disease take a heavy toll or even kill the entire herd. The deer in the picture above have eaten the lower branches and leaves of the trees as high as they can reach. Were this to happen to a whole forest, deer would starve.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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Governor

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COVER

Win Donat used oils and a mounted specimen to produce this excellent picture of a ruffed grouse. Grouse are important game birds in Western North Carolina.

★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★

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★

Although the Wildlife Resources Commission has no jurisdiction over fishing in coastal waters, we believe that many of our readers go down to the coast for sport fishing. For this reason we will run articles of interest to salt water fishermen from time to time as a service. Any opinions expressed in material pertaining to salt water fishing should in no way be construed to be those of the Wildlife Commission.

LET'S LEARN ABOUT OUR WILDLIFE

The Fourteenth of a Series on The Wildlife Species of North Carolina

THE WHITE-TAILED DEER

By ROD AMUNDSON

(Photo by E. P. Haddon, Courtesy U. S. Fish & Wildlife Service)

Deer grow and shed a pair of antlers each year. The antlers on this young buck are in the velvet stage. When the antlers are fully grown the buck will rub them against trees to remove the velvet coating.

HISTORY

THE primeval forest which once covered North Carolina like an emerald carpet was not an ideal home for white-tailed deer. There are undoubtedly more deer in the state today than there were when Virginia Dare was born. This does not mean that deer are especially abundant, or that there are enough to supply in all cases the demands of sportsmen. We must remember that the human population is growing by leaps and bounds, and that the number of hunters increases annually proportionately faster than the normal population increases. Thus North Carolina, like many other states, has what has been termed a "deer problem."

In the days of early explorations members of exploratory expeditions recorded killing their own horses for food—this in areas where deer are now plentiful. Although from earliest days the rifleman's bullets took a toll of deer, the woodman's axe and the farmer's plow have done much to increase deer populations. Although deer are considered to be forest animals, they like clearings and brushy areas rather than heavy forests.

Long before white men came to America, deer played an important part in the lives of the natives. The flesh of deer made tasty cuts of venison, or was dried and preserved for long journeys on the trail. The skins became garments and the walls of wigwams, and bones were used to make tools and weapons. The tough sinews and leather thongs bound sticks to stones to make arrows and spears, or lacings for garments and strings for bows. Deerskins today make fine leather jackets, gloves, and moccasins. Deer have truly played an important part in the history of North Carolina. They have survived abundantly to tell the tale.

Although deer once were common to almost the entire United States, they became completely extinct in many places, and are still unknown in many parts of the country. In Pennsylvania, for example, deer were once completely exterminated, although at present that state is considered to be one of the important states from a deer hunting point of view.

In Iowa deer were once eliminated from all but a small section of the state along the Des Moines river. In recent years deer have extended their range throughout most of that state. Nebraskans once believed their deer herds to be on the way to oblivion, but have had two open seasons on deer in the past five years to cut down deer herds in certain localities. From these and other indications, it would seem that there is little danger of losing deer hunting as a favored sport.

CHARACTERISTICS

Biologically speaking, deer are large, cloven-hoofed animals of vegetarian habit, characterized by antlers (which are shed annually) in the males of the species. The white-tailed, or Virginia deer,

is the only species native to North Carolina. They are less common in western states where the black-tailed, or mule deer, is the common variety. The name "white-tail" comes from the long bushy tail which is white on the underside, and which is flashed or flared in times of stress or excitement. The white-tail ranges in size from 150 to 300 pounds for adults, with the size range varying above and below these figures, depending on the availability and quality of food.

The general color is a reddish brown above, with whitish in the throat and underparts of the body. There is some seasonal variation in color among adults, and color differences between young and old animals. During the summer months the general color of adults runs more to the russet hues, while in the wintertime the color is a duller, grayish tone. This color difference brings up an interesting fact regarding the texture of the hair. In the summer coat, the individual hairs are light in weight with a hollow core. In the winter the hairs are more dense, and the hollow center of the hairs may be entirely absent.

Fawns are born with a striking color pattern which is a marvel of natural camouflage. The general color is a bright reddish-brown with white underparts. Over the back are several rows of small white spots which make the young animals almost invisible in the lights and shadows of the woodland. This coloration disappears during the second year of life as the animals grow toward maturity.

Antlers are not exclusively the armament of male deer. Occasionally females are found with small or deformed antlers. A new set of antlers is grown each year, reaching prime hardness and polish during the mating season and shed in early spring. They are immediately replaced by a new, velvety, rapidly-growing pair. In the fall the velvet covering is removed from the antlers by rubbing them against trees until the high state of polish is achieved.

The size of the antlers and the number of prongs or points in a rack of antlers are by no means an accurate measure of the age of the animal. It is normal to expect a young buck to have nothing more than a pair of spikes, and a healthy four-year-old to display a six-point spread. An older, but less healthy buck may have but three or four. In mature bucks the size of the antlers indicates health and vigor rather than age. Prime bucks with eight-point antlers are prized trophies of deer hunters.

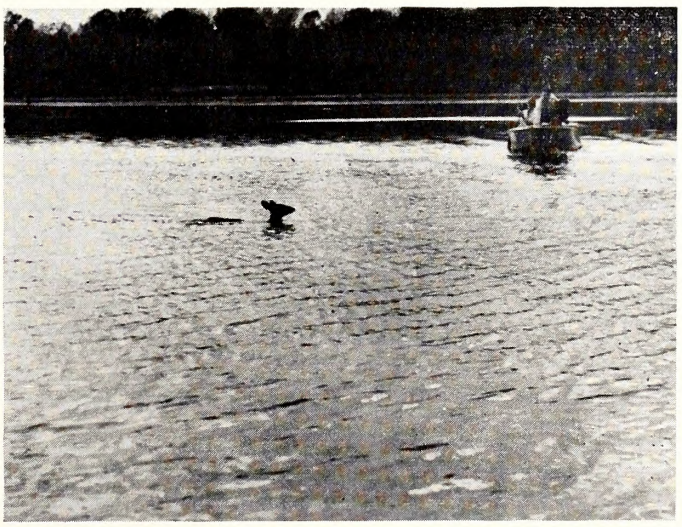
The teeth of deer are characteristic of such related animals as sheep, goats, and cattle. The upper front teeth are absent, with molars being the only teeth in the upper jaw. While antlers fail to measure the age of deer, the condition and appearance of the teeth make an accurate determination of age possible. Biologists who have made a study of the dental structure of deer can tell their age within a year.

FOOD HABITS

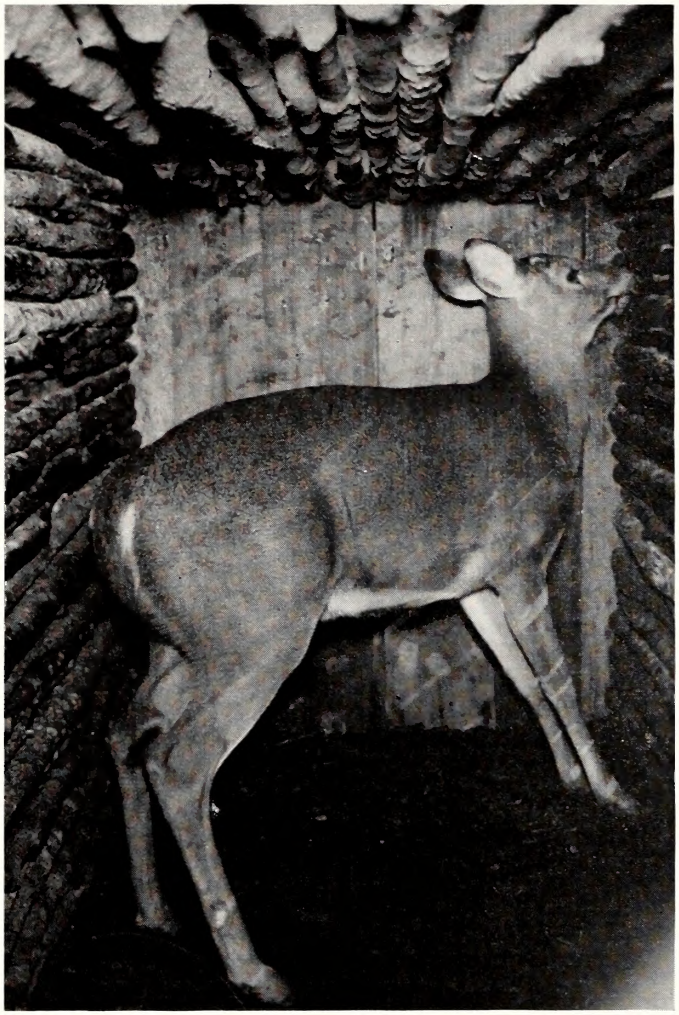
The food habits of deer lend a clue to their preference for open brushy areas to dense forests. Deer are essentially browsing animals, with a liking for the leaves, buds, and tender twigs of low-growing trees and shrubs. In a heavy, tall forest, there is very little of this material available. The food habits of deer bring up an important problem in deer management. Where deer herds have been allowed to become too numerous, as has happened in many instances, they may entirely destroy the source of their food supply, and thus, themselves. Since they are non-migratory, they simply starve to death or become so weakened that predators and disease kill them off.

Although browse comprises most of the deer diet, there is a wide range of items on the menu. They will eat aquatic plants, grass, acorns, and all too frequently, agricultural crops. In eastern North Carolina where deer are numerous, farmers are given frequent cause for concern when deer invade peanut patches and soybean fields, not to mention kitchen gardens and vegetable fields. There seem to be few plants which deer will not at some time or other sample or consume.

A phenomenon which is often called a "deer line" has been observed in recent years where deer populations have grown beyond the capacity of the land to feed them. Deer destroy the entire supply of low-growing food plants including the lowest branches of trees. In a further search for food they begin to reach higher and higher into the trees for food until at last no living branch appears below the highest point the deer can reach. When such a condition is attained the deer population in the area stands in real danger of starving to death although an abundance of food may be only a few miles away.



Deer do not hesitate to take to water when pursued by hunters or dogs. Their hair is hollow, and gives them bouyancy. Note that the doe shown above has part of her back out of the water although she is swimming in deep water.



Deer are trapped in areas where they are plentiful and transported to areas where stocking is desired. The trapped buck shown here has recently shed his antlers. Note scar on his head where antlers grew.

BREEDING HABITS

White-tailed deer are rather solitary animals, and the only grouping together occurs during the breeding season. In late summer or early fall, at the time the antlers have been matured and polished, the males become somewhat restless and much more bold than during the rest of the year. The approach of the breeding season is characterized by a swelling in the necks of the males. At this time the sexes pair off, and there may be some fighting among males. One often hears tales of bucks fighting in the woods, getting their antlers locked together, and starving to death. This does happen occasionally, as whitened skeletons with locked antlers have proved.

Male white-tailed deer are more monogamous than the males of other members of the deer family. They pursue a single doe throughout the mating season, but are likely to seek another mate the following season.

The gestation period is about 210 days, and fawns are born in late spring. During her first reproduction year a doe almost invariably has a single fawn. In succeeding years twins are the rule and triplets are frequent offspring of healthy, well-fed does.

Fawns weigh only about four pounds at birth, and for the first few weeks are rather weak and helpless. Usually the doe hides her fawns in a dense growth of shrubs or grasses, and may leave them for several hours at a time while feeding on browse. These conditions have led many people to believe that they have found orphaned fawns in the woods, and out of kindness, to take them in to be raised as pets. Such a practice is not only illegal, but dangerous. Only rarely are fawns orphaned through accident or the intentional destruction of the mother by poachers. Fawns which are picked up in the woods by well-meaning humans make affectionate and attractive pets—for the first two years. When the woodland waifs reach maturity they become nuisances. All too frequently they become dangerous, and have to be disposed of. Several times each year North Carolina game protectors are called upon to come and get a pet deer which has become vicious. Disposition of such animals is a problem. Taken to a new locality to be released in the wilds, they have little knowledge of how to take care of themselves. If predators don't get them, they are apt to get a shotgun slug between their eyes as they come up to a deer hunter to beg for sweets. To curtail the taking of "orphaned" fawns from the woods, it has become necessary to prosecute persons committing such an act for taking and possessing deer out of season. Fawns which are known to have been orphaned by accident should be reported to game protectors for proper disposition.

In normal conditions fawns are weaned in about eight months. Male fawns may stay with their mother for a year and females for two years.

ENEMIES

Other than man himself, Man's Best Friend is perhaps the greatest enemy of deer in North Carolina. Too many dog owners allow their dogs to roam freely in the woods during off-season months, and the dogs get into the vicious habit of chasing deer. This activity is particularly damaging when the does are heavy with fawn. Even healthy bucks succumb to packs of free-hunting dogs. They may be chased for miles, only to cross a body of water to escape, become chilled, and die of respiratory disease.

Large predators such as bobcats take a toll of fawns, although there is no great loss from this factor since bobcats are relatively scarce.

A potential danger to deer is deer themselves. Game managers must constantly be on the alert for evidence of deer populations reaching dangerous proportions in the threat of destroying their food and plant life which provides it. Apparently there is little danger of such instances occurring in North Carolina at present, but such things have happened

in other states. Thousands of deer have starved to death because they became too numerous.

From time to time outbreaks of disease become a threat to deer. An example is the disease which took a toll of deer in the fall of 1949. From New York to Texas deer died from a disease which up to 1950 had not been positively identified.

Veterinarians have been highly successful in controlling disease in domestic livestock. Domestic animals can be penned and treated with comparative ease, but wild deer would indeed be elusive subjects for the hypodermic needle or the medicine bottle.

Internal and external parasites affect deer just as they do domestic animals, but seldom become a menace. Deer may eat plants which have been sprayed with insecticides or herbicides. A number of fatalities have been reported in recent years from this cause.

Despite this rather imposing array of dangers, deer maintain a position as important game animals; proper management will assure an ample supply of deer for generations to come.

Left to right are hind legs of mule, black-tail, and white-tail deer showing scent glands located on the outside of the legs. A white fringe of hair around the glands in the white-tailed deer are a distinguishing mark.

MANAGEMENT

The management of deer has been one of the most publicized of wildlife problems in recent years. Wherever deer occur there arises a "deer problem." The trouble may lie in a scarcity of deer, or the opposite extreme, an over-abundance. During the period of years when deer seemed in danger of extinction, many state legislatures passed laws which prohibited the shooting of any deer other than bucks with visible antlers. When deer populations reached and passed the danger point, many wildlife agencies came to regret these laws. In a few states the so-called "buck law" has been repealed, and others are considering the advisability of such action. Whether it will be necessary to repeal the buck law in North Carolina remains to be seen. Under normal circumstances, with a limited hunting season on bucks only, deer herds can easily increase despite an annual harvest of bucks. In eastern North Carolina deer hunters have reported an abundance of does but a scarcity of bucks. There is, however, still a great deal of public sentiment against allowing does to be killed when an unbalanced ratio between does and bucks occurs. Does need be killed only when it is necessary to adjust deer populations to the capacity of land to support them, or to re-establish a biologically sound balance of sexes.

Deer have been stocked successfully in many areas where they were absent but where suitable habitat was present. Pennsylvania was once completely devoid of deer. Judicious stocking and careful management have placed Pennsylvania in the category of an important deer hunting state.

In North Carolina arrangements have been made to trap deer from areas which are not open to hunting, or where limited hunting does not dispose of surplus animals, or where there is an over-abundance of does. These trapped animals are transported to localities which have suitable deer habitat, but where deer are totally absent. Thus deer hunting range in the state will be increased without robbing hunters of their sport.

Hunters in the eastern part of North Carolina have little need to worry about deer destroying their food supply. The woods are amply supplied with browse, and many meadow lands have a good growth of shrubs which provide food.

Next month hawks and owls will be treated as a group because of their importance to other wildlife species. An attempt will be made to show why hawks and owls in general should be protected from senseless killing.

Channel Bass

ARE THEY ON THE WAY OUT?

By Ed Fike
Outdoor Writer, Ahoskie, N. C.

(Photos Courtesy Dept. of Conservation & Development)

A forty-pound channel bass (often called Red Drum) is a challenge to the skill of an angler, even though he may be equipped with heavy surf-casting tackle. Surf-casting is a rigorous sport, and requires great skill to get the bait out to where the fish are feeding.

"THERE THEY ARE—GET YOUR RODS!" is a cry given many times in the past, by the charter boat captains, during the spring run of channel bass at Oregon Inlet. The cry never failed to thrill the anglers aboard, because it meant action with a big A.

Fishing for channel bass at Oregon Inlet is different from channel bass fishing at any other location. The fish feed on and around the sand bars which extend in a giant horseshoe almost a mile out to sea from the Inlet and it is impossible to reach the fish except by charter boat.

Channel bass, known along the North Carolina coast as "Red Drum," arrive at Oregon Inlet around the first of April, in schools of from a few fish to big schools of several hundred. Sometimes the big schools break up into a number of smaller schools and they have a picnic feeding on the millions of herring which pour through the inlet on their way to the inland spawning grounds.

Anglers after these fish usually charter their boat at Dyke's Place at the Manteo end of the bridge across Roanoke Sound. After arriving at the fishing grounds, the captain cruises around the mouth of the inlet looking for the telltale splotch of red in the water which means a school of fighting channel bass. Once a school is located, the captain maneuvers the boat as near as possible without frightening them, so his anglers can cast the big spoon bait into the school.

The big silvery artificial spoon seems to be the most effective bait for these big fish, because it is the nearest imitation of the silvery herring upon which they feed. The large feather jigs and king size plugs have produced good catches and are often used because they are much easier to cast than the lighter spoons.

Many fishermen prefer trolling as a method of taking channel bass. Shown here is Bill Sharpe, former chief of the State News Bureau, enjoying a fishing trip off the North Carolina coast.

Parties aboard the charter boat usually number from one to five anglers, with three or four being the ideal number. The reason for the small number is that room is needed for casting and playing these

fighting fish. Often every rod aboard will have a fish on at the same time and then it is every man for himself, and in the resulting confusion, half of those hooked are lost.

The fine and exciting fishing for channel bass seems to be on its way out. There has been a progressive decrease in the numbers of channel bass coming to our shores each year for the past ten years. This past season has seen the fewest number of fish caught in the history of sport fishing for channel bass at Oregon Inlet. Last year was poorer than the year before and so on back to about 1938.

The Atlantic States Marine Fisheries Commission (of which North Carolina is now a member) became alarmed back in 1942 at the decrease in channel bass and appointed a special panel to study the situation. This panel met in Richmond in March 1943 and urged immediate conservation measures. Study showed that special conservation was needed for the breeding size fish and since channel bass reach spawning maturity when they are 32 inches in length, they recommended the following regulations be put into effect by the states along the Atlantic.

> "All channel bass 32 inches or larger to be given full protection from commercial fishermen and a strict bag limit (of two per angler) be put on sport anglers taking these fish. All channel bass under 15 inches to be given full protection."

Since practically all the channel bass which make the spring run at Oregon Inlet are of breeding size, the regulation was sorely needed. North Carolina ignored the recommendation of the panel in 1943 and has done nothing about it since then. In the meantime the number of sport fishermen increased by leaps and bounds, with each taking their toll of the breeding stock. In 1946, due to the war scarcity of meats, a cannery for canning channel bass was opened at Wanchese and their commercial net catches (sometimes from 500 to 1000 at one set of the net) just about finished what the sport fishermen had started, the elimination of the brood stock.

The cannery did such an efficient job the first few years that during the past season they were unable to open for the lack of fish and last year they were able to operate only part time.

It would be hard to estimate the amount of money spent by channel bass anglers at hotels, cafes, garages, guides, pop shops, etc. along the Dare Coast and it would seem that these business people would be the first to start conservation, knowing that it would mean more fish and more fish would mean more sportsmen.

Such is the picture of the present channel bass situation at Oregon Inlet and unless some drastic steps of conservation are taken, channel bass fishing as we have known it in the past, will be dead as the Dodo in a few years.

"Aiming at the moon" is what surf-casters call throwing a bait as far out into the Atlantic as possible.

Since the N. C. Wildlife Resources Commission has no jurisdiction over salt water fishing, the opinions expressed in this article should in no way be considered those of the Commission. We believe, however, that Tar Heel sportsmen are interested in salt water fishing, and for this reason present the above material.

"JOE BEAVER" **By Ed Nofziger**

Forest Service, U. S. Department of Agriculture

"But you told me man is the world's smartest creature."

JUNIOR WILDLIFE CLUB ACTIVITIES

CHARLES L. COON HIGH SCHOOL, WILSON, N. C., PLANS FIELD TRIPS

Youngsters at Charles L. Coon High School take advantage of living materials in nature study. Carey Kinney and Viola Riley are experimenting with plants.

At the beginning of the current school year, four Wildlife Clubs were organized in the Charles L. Coon High School, Wilson, N. C., in response to student interest in the wildlife resources of North Carolina, the inter-relationships of these resources, and the duties of each citizen in conserving the resources. As a major objective the clubs decided to aid in every way possible the "protection, restoration, proper use, and management of wildlife resources."

Visits and interesting talks by Miss Lunette Barber, Junior Publicity Specialist with the Wildlife Commission, helped to stimulate early activity within the clubs. Films on conservation which are owned by the local unit were employed as an approach to the over-all problem, and other films prepared by the North Carolina Wildlife Commission were scheduled to be used throughout the year. All groups subscribed to the magazine *Wildlife in North Carolina,* and copies are studied during club meetings. Field trips have been made, and others are planned. After beginning a study of wild fowl, some members constructed bird houses and feeding stations. Other members have used paints, crayons, and other media to portray the various species of wild fowl.

The members of the clubs plan to study as extensively as possible during the school year forms of North Carolina wildlife, both aquatic and terrestrial.

JOIN A PEN PALS GROUP AND FIND OUT WHAT OTHER CLUBS DO

Junior wildlife clubs are springing up in schools over the state like mushrooms. Students in many clubs are interested in learning what is being done in other clubs and other schools. The eighth grade pupils of Orrum School, Orrum, N. C. want to become "Pen Pals" with pupils in other schools. Below are their names. Select the name of an Orrum School pupil you would like to correspond with, and write him or her a letter telling about your own wildlife club. They will reply to you and tell you how much fun they are having in their club.

Wildlife club members in other schools who want to receive letters from Pen Pals should send in their names to: The Editor, Wildlife in North Carolina, Box 2919, Raleigh, N. C. Your name and address will be printed on this page, and soon you will begin getting letters.

* * * * *

Agnes Bissell
Route 1
Orrum, N. C.

Ann Carolyn Stone
Box 15
Procterville, N. C.

Dale Bullock
Route 1
Orrum, N. C.

Eugene Stone
Route 1
Orrum, N. C.

Gerald Flowers
Route 2
Fairmont, N. C.

G. W. Brigman
Route 1
Orrum, N. C.

Hal Dixon Ivey
Route 1
Orrum, N. C.

Heddia May Mincey
Route 2
Fairmont, N. C.

James Neil Hedgpeth
Route 2
Fairmont, N. C.

Lavice Rhodes
Route 2
Fairmont, N. C.

Lendin Warwick
Procterville,
North Carolina

Morris Britt
Route 2
Lumberton, N. C.

Oliver Atkinson
Route 1
Orrum, N. C.

Ruby Britt
Route 1
Orrum, N. C.

Shellie Jean Walters
Orrum,
North Carolina

Sylvia Gail Sealey
Route 2
Fairmont, N. C.

Tommy Lewis
Route 2
Chadbourn, N. C.

Lendstrom Nye
Route 1
Orrum, N. C.

Shirley Flowers
Route 1
Orrum, N. C.

Wayne Nye
Route 1
Orrum, N. C.

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

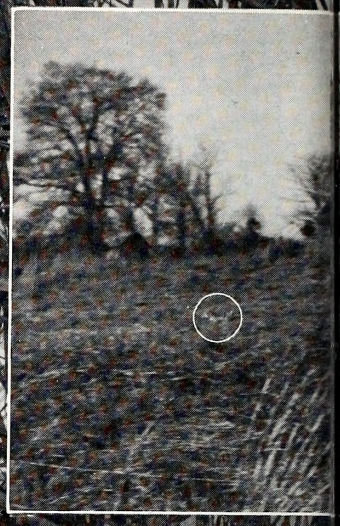
A ROUNDUP OF THE LATEST WILDLIFE NEWS

FINAL REPORTS ON FISH AND GAME LAW PROSECUTIONS FOR 1949 HAVE BEEN COMPLETED AND THE FIGURES SHOW AN INCREASE OVER THE ESTIMATES WHICH APPEARED ON THIS PAGE LAST MONTH. ALTOGETHER THERE WERE 5,971 COURT PROSECUTIONS LAST YEAR WITH FINES AND COSTS TOTALING $88,952.00. THIS IS AN ALL-TIME RECORD FOR NORTH CAROLINA. IN 1944 THERE WERE ONLY 1,301 PROSECUTIONS AND $11,522.00 IN FINES AND COSTS. PROSECUTION REPORTS INDICATE THAT COURTS ARE INCREASING BOTH FINES AND COSTS FOR FISH AND GAME LAW CONVICTIONS. THIS MAY BE A REFLECTION OF INCREASING PUBLIC SUPPORT TO THE WILDLIFE COMMISSION'S PROGRAM.

HAYDEN OLDS, FORMER CHIEF OF THE WILDLIFE COMMISSION'S GAME DIVISION, HAS BEEN PROMOTED TO THE POSITION OF ASSISTANT TO THE EXECUTIVE DIRECTOR. EUGENE E. SCHWALL, FORMERLY COORDINATOR OF FEDERAL AID PROJECTS, HAS REPLACED OLDS AS CHIEF OF THE GAME DIVISION AND WILL RETAIN THE POSITION OF COORDINATOR. THE APPOINTMENT OF AN ASSISTANT COORDINATOR IS BEING CONTEMPLATED.

THE WILDLIFE COMMISSION'S "HUNTING BY PERMISSION ONLY" POSTER CAMPAIGN HAS TURNED OUT TO BE SUCCESSFUL BEYOND ORIGINAL EXPECTATIONS. ALTOGETHER OVER 35,000 POSTERS WERE DISTRIBUTED FREE OF CHARGE TO LANDOWNERS WHO WOULD ALLOW SOME HUNTING ON THEIR LAND BUT WHO WISHED TO KNOW THE IDENTITY OF HUNTERS. 300 RECIPIENTS OF THE POSTERS WERE POLLED FROM RANDOM SELECTIONS OF APPLICATION FORMS. OF MORE THAN 100 REPLIES TO THE POLL QUESTIONNAIRE, ONLY ONE PERSON EXPRESSED DOUBT AS TO THE VALUE OF THE PROGRAM. THE OTHER REPLIES WERE HIGHLY ENTHUSIASTIC. SEVERAL LANDOWNERS SUGGESTED THAT THE WORD "FISHING" BE ADDED TO THE POSTERS SO THAT FISHING IN FARM PONDS OR STREAMS RUNNING THROUGH PRIVATE PROPERTY COULD BE CONTROLLED. IT IS PLANNED THAT THIS IDEA WILL BE CARRIED OUT FOR THIS YEAR'S POSTERS. THE "HUNTING BY PERMISSION ONLY" IDEA WAS ORIGINATED BY PAUL T. GILBERT, EXECUTIVE SECRETARY OF THE NEBRASKA GAME, FORESTATION AND PARKS COMMISSION, AND THE PROJECT USED IN NORTH CAROLINA IS PART OF THE WILDLIFE COMMISSION'S EDUCATION PROGRAM.

RADIO STATION W A D E, WADESBORO, HAS BEEN ADDED TO THE NETWORK OF 16 STATIONS WHICH AIR THE WILDLIFE COMMISSION'S WEEKLY PROGRAM "THE TAR HEEL WILDLIFE REVIEW." OTHER STATIONS INTERESTED IN OBTAINING THE PROGRAM MAY DO SO BY WRITING TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH, N. C.



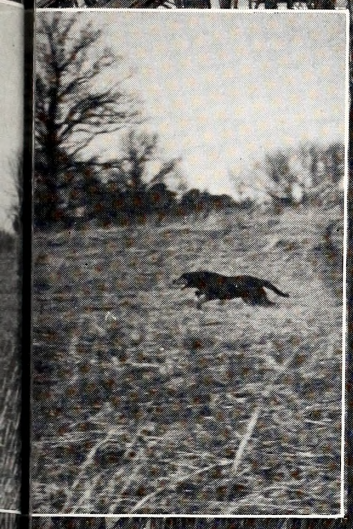
RABBIT HUNTING -KE

A Photo Fea Marga

This is the tale about the r d wh interesting one. Rabbit hunting e hou thing to see and hear when Tom d his

Tom and party brought along doze tick—and no sooner had they be ed th with the dogs barking and the lling, anticipate the direction of the ch ran the rabbit to circle back. But the too giving the cottontail a chance to in t a couple of false leads, the houn up t the rabbit out, a gunshot indicati Tom would be hard to say which were t enthu

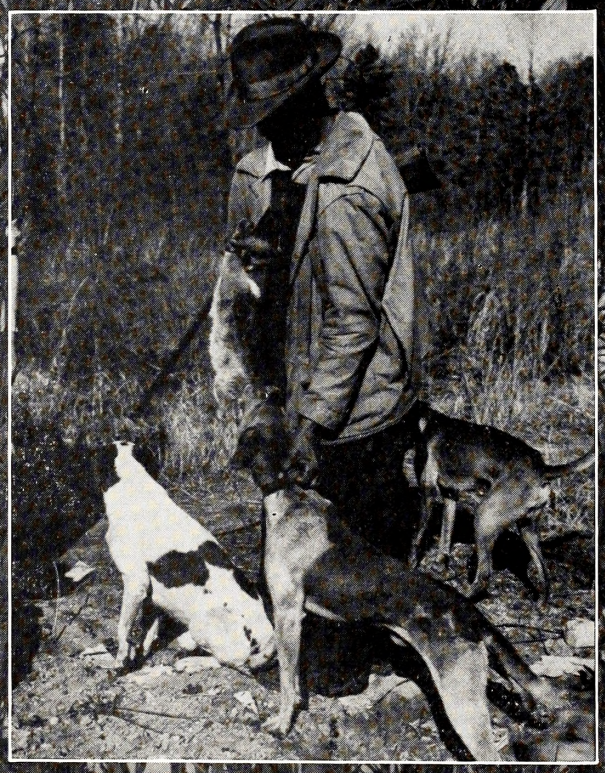
With such a good start each arty s bits for a mighty fine barbecue o bbit



KE COUNTY STYLE

Fea Margaret Fisler

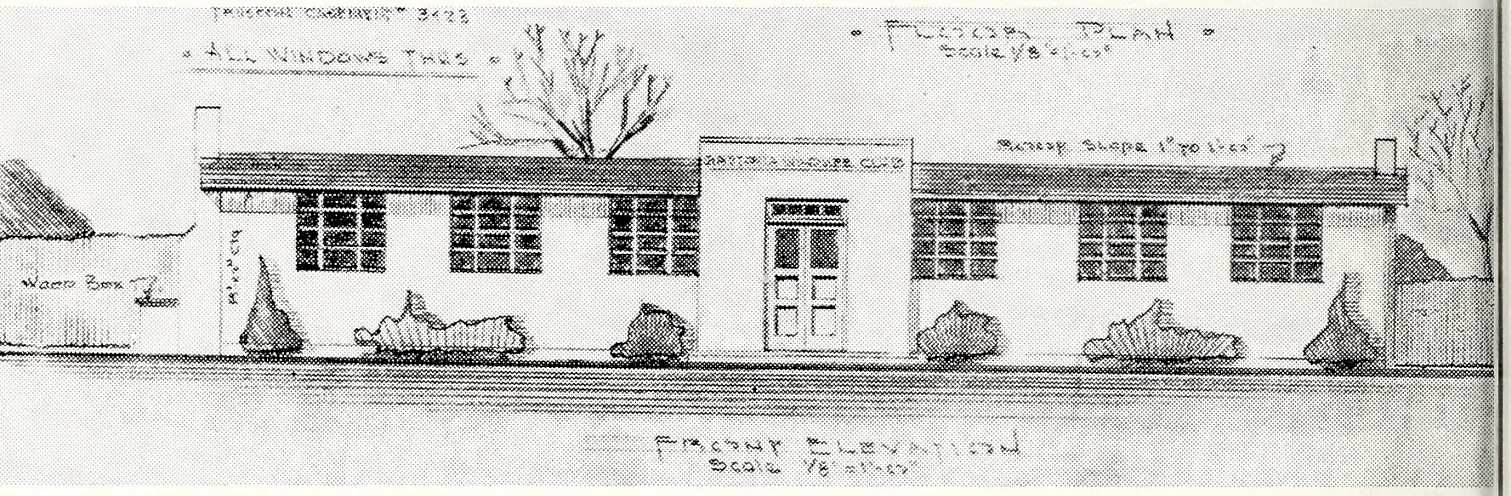
d while it may be short, it is an
e hounds giving a chase is some-
d his friends turn their dogs loose.
dozen hounds—Walker and Blue-
ed than they "hit a scent," and
lling, the chase was on. Trying to
ran down the "hollow" expecting
too eager and jumped the track,
" in the brush. After getting off on
d up the track and this time brought
om had gotten his first rabbit. It
enthusiastic, the dogs or the men.
arty soon had bagged enough rab-
bbit supper.



GASTON COUNTY CLUB BUILDS CLUBHOUSE FOR INCREASED ACTIVITY

By George W. Keesee

Chairman, Wildlife Resources Commission



Above is an architect's drawing of the Gaston clubhouse. Projects such as this stimulate interest in club work, give members something to work for, and make club meetings a pleasure.

The idea of this clubhouse and club property was conceived at a meeting about six months ago of the officers and members, in an attempt to increase our membership and interest in wildlife in general. At that time our club consisted of about 70 members. Today we have more than 650.

The clubhouse is a corporation operating jointly with the Gaston County Wildlife Club. We have purchased approximately 15 acres of river frontage land on the Catawba reservoir. This land contains two large coves and is an excellent place for motor boating, fishing, and other water sports. The land has been cleared and arrangements are under way for trap shooting and skeet shooting equipment to be erected.

The main building, or clubhouse, is to be 40' x 60' of concrete block construction, with kitchen equipment and tables to accommodate 175 to 200 persons at a time.

The building committee is at work on various phases of the design of the interior of the building. An outside barbecue pit is under way, and arrangements for a deep well for water supply have been completed.

The financing of this project has been taken care of by a stock subscription of $20.00 per share of nontransferable stock; and when this plan was proposed to the sportsmen, sufficient amount of stock was sold in less than six weeks to completely pay for the land and finance the building.

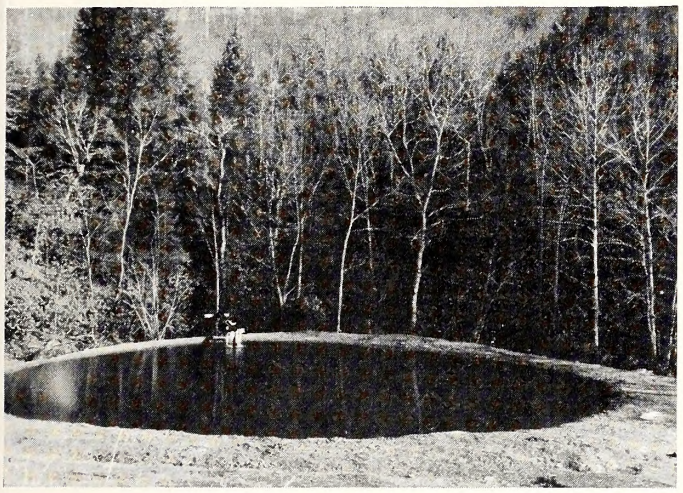
The entire project has met with tremendous favor among the sportsmen. A large number of our membership assisted in the handling and selling of this stock; however, the one man who shouldered the burden and really did a tremendous job was W. A. Robinson (Bill), of the Robinson Office Equipment Company of Gastonia. Bill certainly deserves credit for the effort and time that he has put into this project and the Gaston County Wildlife Club, and all the members are very grateful to him.

Besides doing a grand job in promoting this worthwhile project for the sportsmen, the Gaston County Club are loyal supporters of the program now under way with the Wildlife Resources Commission. The members are conservation minded and are anxious to do anything to further the sound game and fish program.

The cheetah or hunting leopard of India is credited with being the swiftest four-footed animal.

HENDERSON COUNTY WILDLIFE CLUB ACTIVITIES

By Marshall Watterson



Water from a mountain stream fills this trout rearing pool sponsored by the Henderson County Wildlife Club. Trout are fed and reared to stocking size by club members.

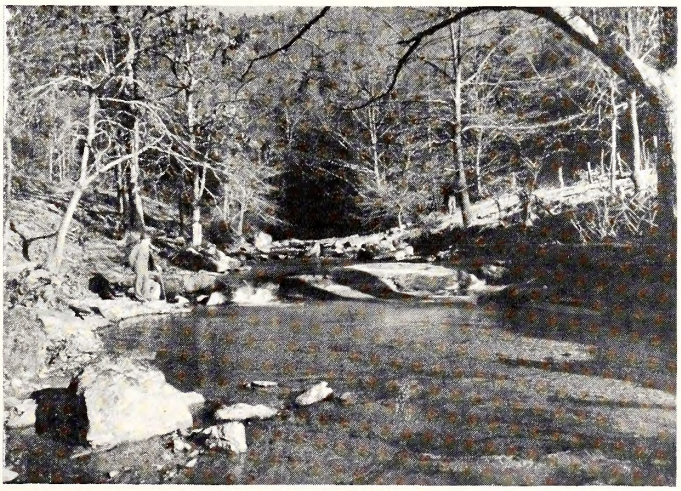
Realizing that something must be done, and that pretty soon, toward the protection and preservation of our wildlife in this little county nestling among mountains of Western North Carolina, a small group of farmers and landowners got together at the consolidated high school at Dana, N. C., (about the center of the eastern portion of the county), and decided to do something about the problem. Wildlife and fish preservation and promotion has been practically nil in this county for many years; consequently, this little group had to start from scratch. They decided to attempt to form a sort of wildlife club with the idea in mind of cooperating and obtaining help from the Wildlife Resource program of the State. With the able and welcomed assistance of the County Game Protector that little group of farmers formed "The East Henderson County Wildlife Club" with only about eight members being present at that first meeting. They went out from there and "talked up" the subject among the farmers and landowners of the section. They had one thing in their favor. The sentiment was not against them. It was for them. People quickly and willingly expressed a profound desire to join up with such a movement, and the club grew from the very beginning. Indeed, it has become a sore spot among the farmers of Henderson County because of the indiscriminate destroying of our wildlife by the so-called sportsmen from our cities and country. Our game in this county is becoming very scarce; our streams have been dry-cleaned of fish by promiscuous seining and even dynamiting. Thus, it was very easy to get farmers and landowners to join the club. All this about one year ago. The club asked for and obtained invaluable assistance from the Wildlife Commission with regard to organizing, obtaining fish to plant in the streams, and getting quail and other game to loose on the farms of the territory. The County Game Protector helped greatly.

At this writing the club has 139 active members who are filled with enthusiasm for this worthwhile project. All members are either farmers themselves or own land in the territory covered by the club. The territory covered by the club comprises the entire eastern portion of Henderson County. In the territory covered by the club are 124 farms owned by members. These farms total approximately 7,365 acres of land. The area also contains 75 miles of the very finest trout streams in the state. Indeed, Big Hungry, one of the trout streams flowing eastward in eastern Henderson County, has been designated by the Commission as containing the best food per mile for trout of any stream in the state. Other trout streams in Eastern Henderson County are Green River and Rocky Gorge.

For wildlife hunting, among the membership are the following dogs: 50 fox hounds, 35 coon dogs, 32 bird dogs, and 75 beagle hounds.

During the first year of its existence the club planted approximately seven thousand trout (five and six inches) in the streams mentioned above. This is considered by the club as being a great achievement, especially since this is considered a record planting in this area for one year's activities.

The club leased a small plot of bottom land adjoining Big Hungry, situated in a very picturesque setting, and constructed a spacious pool by bulldozing out the bottom, and made it into a clear, crystal pool for rearing fish, from finger length size, obtained from the State Hatcheries. The water running into this pool is troughed in from high atop



One of the streams stocked with trout from the club's rearing pool. Rocks in the stream make hiding places for trout.

an adjoining mountain side from a pure, mountain stream. Upon arrival the fish are to be placed in the pool for rearing to stream size and thence planted in our trout streams. The pool site is also used as a picnic grounds for the club. An enjoyable "Southern fried chicken" supper was experienced there recently.

The club purchased and released 37 pairs of quail last spring. It purchased and loosed 24 pairs of rabbits in the territory. It bought and distributed among its members 100 pounds of lespedeza seed for sowing along hedge-rows and along wooded lands for feeding and protecting of birds during the fall and winter months. Further plans along this line are in progress with regards to obtaining lespedeza plants from the Wildlife Commission for planting into hedge-rows and along fence-rows as a protection and feeding ground for our feathered friends as well as a sanctuary for rabbits and such.

Two members of the club have been deputized as game protectors and these two have apprehended several game violators, and aided in subsequent convictions. The club has encouraged the posting of land by its members; and signs labeled "Hunting By Permission Only" are dotting the area at this writing. These signs were obtained from the Wildlife Commission in Raleigh.

The club has sponsored several outdoor picnics and all have been enthusiastically attended.

During the first year the club took in $663.11; they spent $431.52.

So, the East Henderson County Wildlife Club can brag that it has achieved a fair success during the first year of its existence, and bids fair to becoming a great influence in this section with regard to the preservation and promotion of our wildlife. The members point with pride to their achievement and feel safe in the knowledge that they are fellow workers in a great and worthwhile program.

The Life of a Game Protector

If the Game Protector asks to see your license—he's insulting.
If he takes your word for having one—he is corrupt.
If he arrests a violator—he is showing how tough he is.
If he gives a culprit another chance—he's showing favoritism.
If he labors day and night to enforce the law—he's a tyrant.
If he relaxes at all—he's a shirker and a crook.
If he talks fish and game conservation—he's maudlin.
If he keeps quiet—he's not interested in his work.
If he accepts suggestions or advice—he's incompetent.
If he works out a problem for himself—he's a know-it-all.
If he acts like a gentleman—he's too easy.
If he acts firm—he's unfair, and a rascal.

"Neither children nor adults seek to preserve that which they do not understand or appreciate."

—Clyde Hissong

NATIONAL WILDLIFE RESTORATION WEEK

America's 13th annual National Wildlife Restoration Week, originally established by Presidential proclamation in 1938, will be observed this year during the week of March 19-25, under the sponsorship of the National Wildlife Federation.

Wildlife Week aims to focus the attention of 150 million Americans upon the importance of wildlife conservation to their every-day life and the debt which they owe coming generations to help perpetuate our natural resources for future welfare and prosperity.

State, county and local group meetings throughout the nation will direct public discussions of wildlife conservation through prudent management of America's natural resources, including water, soil, trees and all other plant as well as animal life. Conservation-minded and public-spirited organizations participating will include sportsmen's associations, garden and nature clubs, and other adult and school groups.

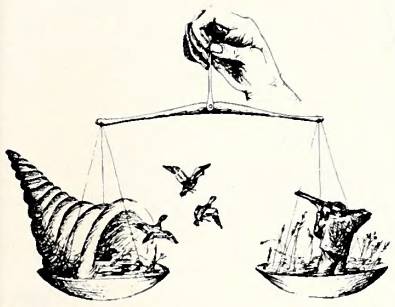
Calling all lovers of the outdoors to take part in a nation-wide conservation program, the National Wildlife Federation urges cooperation with State Conservation officials, as emergencies may arise, in winter feeding of snowbound birds and animals to prevent suffering and losses through starvation.

Ever since Wildlife Week was inaugurated by the Federation and recognized by proclamation of the late President Franklin D. Roosevelt in 1938, the Federation has carried on a year-round conservation education program. The Federation Business office issues annually a series of Wildlife Conservation Stamps, with descriptive albums for preserving them.

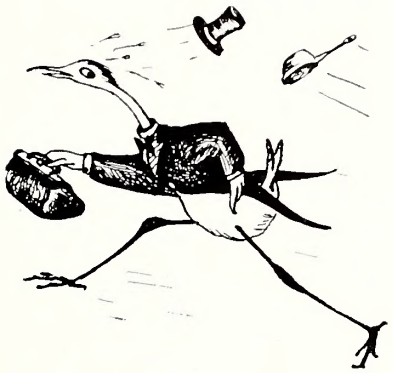
The distribution of these stamps during Wildlife Week and other times is a part of the education program of the Federation. Proceeds from their sale are the organization's main source of income to carry on its wildlife programs. The 1950 series in natural colors include 36 animal, bird and plant subjects from the brush of Walter Weber, of Vienna, Va., famed wildlife artist and former art consultant to the Federation.

A non-profit and non-partisan organization, the National Wildlife Federation is composed of an estimated 5 million members of affiliated community and county clubs and State Wildlife Federations.

Conservation studies initiated in 1938 resulted in concentration in the grade schools on teaching conservation. A series of four books, entitled "My Land and Your Land" is in wide use in grades 3 to 8. It is the Federation's aim that these books will become an integral part of the nation's school curricula.



WHY I CHOSE WILDLIFE AS A CAREER



(Sketches by the Author)

By William H. Hon

Junior Student of Wildlife Conservation and Management
N. C. State College

THAT the owl is a very proper and elegant bird one can scarcely deny, and it bears its reputedly vast wisdom with a poise and dignity that is beyond human reproach. However, it sometimes seems a bit unfortunate that such a large portion of avian wisdom should have been vested in that rather useless old fowl, deserving though he may be, when civilization could have profited so richly if that paramount bird, the stork, had been imbued with part of that sagacity and judiciousness. Times without number the stork's capriciousness has been cursed, his pranks bemoaned, his honesty doubted, and his integrity questioned . . . and it is a fact that occasionally, while engaged in dealing out to the beaming parents a variety of prodigies, babies with silver spoons in their mouths, brats, and assorted normal children, the stork leaves with some unsuspecting couple a unique specimen known as a "naturalist." For better or for worse, naturalists are indeed born, not made; and if the parents don't try to scalp the stork when they discover the prank which has been played on them, that is a pretty good sign that the highest ideals of wildlife conservation flow in the family's veins.

The stork could use some of the owl's sagacity.

Dr. Frank Champman many years ago offered to aspiring ornithologists a paradoxical but profound bit of advice that might well be expanded to counsel all of those who wish to enter any profession which deals with Nature. His words were: "Do not be an ornithologist if you can help it," for he well knew that a real birdman could not help it and thus would be turned aside by nothing. Long experience with those who, for one reason or another, had found themselves in the realm of natural science, had demonstrated to "the dean of American ornithologists" that for the uninspired, the work was drudgery and disappointment; but it had also convinced him that for those with an innate longing to explore the mechanics and the meaning of the complex system of life about them, the field holds unexcelled promise of happiness and satisfaction.

Since a naturalist at North Carolina State College is necessarily a wildlife conservationist, I entered the curriculum with hope, but not without some misgivings at the thought of a lifetime devoted to keeping just one jump ahead of a numberless horde of hunters slaughtering the wildlife nearly as fast as I could fatten it for the kill. It has taken only a few months to make me realize that the step I took with hesitation is probably the best thing that could have happened to me. By a process of gentle osmosis, the concepts which form the basis for the objectives and the methods of conservation of our renewable resources have seeped in and begun to resolve themselves into an understandable pattern. If such books as William Vogt's "The Road to Survival" and Fairfield Osborn's "Our Plundered Planet" are read with even a fraction of the seriousness and intenseness with which they were written, one must be impressed by the rapidly increasing importance of the conservationist to every phase of our society. Though the specialized scientific fields are definitely a part of the scheme of man's use of Nature, conservation is the very heart of the scheme, the agency to which all others must ultimately look for guidance in the use of their acquired knowledge; though scientific research and thinking are a reflection of the understanding and culture of the men who govern the destiny of our world, conservation is the mirror which reflects it, without which there is no

Naturalists are born, not made.

(Continued on page 19)

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

If March weather runs true to form we will be looking for the cozy corners with perhaps the companions of some of last season's hunts. There we'll talk over those days afield—the thrills and disappointments, the buck with the rockingchair rack, the six geese that came in with their feet out to land,—all with appropriate gestures. Yes, these things are the stuff that real living is made of—the American way. Yet, do we ever stop in the midst of one of those vivid tales and ask ourselves the question, "Do I have any responsibility to the game I enjoy hunting?" It is true that many of us do not own land on which to try to raise game. *We hunt on the land of another.* Is this not the hint we are looking for? *Where did you hunt last season?* Surely, in many instances you know the land owner and even now could go back to visit him. Here's a suggestion: Why not make arrangements with him now to let you furnish quail food seed and other food and cover plants which can be obtained from local seed dealers and nurseries? Follow this up by providing as much help as you can when it is time to get the plants or seed in. These visits and the small amount of work involved will more than repay you in freedom from "POSTED" sign worry, greater dividends in game and something just as important —new friends. Think it over and then get together with the men on whose land you plan to hunt.

—W.D.

The following letter from Mr. J. M. Cole of Durham, N. C., and the detailed report that it contained, is an example which fully illustrates many of the wildlife principles we are trying to teach: First, these sportsmen *recognized their responsibility and did something* by planting food and cover; second, they were interested enough to keep a record of the game taken as well as the type of food it had been eating and the type of cover it was using, and third, they did not reduce the coveys below a safe number, i.e., they left some seed stock:

"In reading 'Wildlife' I see that you are interested in hunters keeping a report on game observed while hunting. Last year at the beginning of the season I decided I would keep a report on quail. I carried notebook and pencil in hunting and put figures down after each covey rise. The number of birds in the covey are approximate figures derived by hunting companions and myself. The figures as a whole will not be more than one per cent off in my opinion . . .

Each year since 1942 we have sowed several spots in serecia or kobe lespedeza. These spots have surely paid off. This fact shows up in the report, as most of the birds killed were in or close by the spots we sowed. I have found that by sowing food patches, and not shooting birds lower than six or seven, really pays off. You may use this report in any way you see fit."

Note: Hunting approximately twelve days in seven counties, the hunters saw an estimated four hundred forty-one birds, killed ninety-two and examined the crops of all those killed. Lespedeza seeds alone or in combination with others such as partridge peas, honeysuckle seeds, beggar weed seeds, or dogwood balls were found in the crops of sixty-two birds, six were empty and the remaining twenty-four birds had eaten weed seeds, peas and small acorns. The important thing is that most of the birds were found near food patches that had been planted by these sportsmen!

Mr. M. J. Y. of Tillery, N. C. asks, "Is there any record of a gun which shoots perfect targets at long distances? I am thinking particularly of a rifle."

The answer to this question is yes. Such a rifle was manufactured by a famous gun maker for a

customer who became involved in a shooting match for high stakes. It seems that when the barrel was nearly completed, a mistake was made and the barrel was almost discarded. However, some test shots were run which gave phenomenal results. The job was completed and the gun's performance became a curiosity in shooting circles. Many of the arms manufacturers as well as army and navy ordnance experts have examined the weapon to determine the secret of its accuracy. When shot under absolutely constant conditions every shot will fall in the same hole at two hundred yards! This is true when the barrel is rotated and shots are fired at ninety degree intervals. I have seen the gun and verified targets showing what it will do and even to me it's almost unbelievable.

Mr. B. H. S. of Charlotte, N. C., writes, "I have had quite an argument with various friends as to our state law relative to trespassing.

"My understanding is that all land is posted automatically and that it is not necessary to put up signs in order to keep people off the land . . ."

Using the writer's word "posted" in a literal sense, the dictionary definition shows it to mean, "to forbid trespassers under penalty of legal prosecution by notices along the boundary." Therefore, posting can occur only when such notices or public warnings are put up. It is generally believed that the constitution guarantees the sanctity of private property, but the customary attitude taken by the courts supports the interpretation that unless an injury or damage has been committed by an unauthorized person on private property, the mere act of being over the boundary line does not constitute trespass unless a previous warning has been given. It has been upheld by the courts that on posted land, a direct warning or prohibition to get off must have been given to a person before he can be charged with forcible or willful trespass.

A portion of N. C. General Statutes, Section 113-104, reads as follows: "It shall be unlawful for any person or persons to hunt with guns or dogs upon the lands of another without first having obtained permission from the owner or owners of such lands, and said permission so obtained may be continuous for one open hunting season only . . ."

N. C. General Statutes, Section 113-120, provides that it shall be unlawful for any person to hunt, fish, or trap on the lands or waters of another where posted signs have been placed unless written permission has been obtained from the landowner or his agent.

Mr. A. R. B., Jr., of Franklin, N. C., asks, "What procedure does the Wildlife Commission follow in the distribution of fish from its hatcheries? I have a small pond and have been informed that it will support brook trout. How do I apply for fish to stock this pond?"

The procedure for the distribution of hatchery fish adopted by the Wildlife Resources Commission is as follows:

First priority is given to publicly owned or leased waters which are open to all anglers under State regulations. Only legal size trout are stocked.

Next, consideration is given to applications for fish to stock waters owned or controlled in part privately, but which are open to public fishing without fee.

Finally, the Commission will stock private ponds or streams only after the needs of the public waters have been met. Fish for private waters, when stocked, will be fingerling size and charged for in accordance with the cost of producing them. Deliveries will be made at the hatcheries. The U. S. Fish and Wildlife Service, office in the Glenn Building, Atlanta, Georgia, furnishes fish for private waters without charge. These fish are produced by Federal hatcheries.

Mr. C. O. P. of Henderson, N. C., asks, "I don't have the time to do very much game bird hunting during the winter but I do spend quite a bit of time shooting crows in the summer time. As a resident of Granville County, I would like to know the kind of hunting license I should have to shoot crows in this county or if I should happen to cross the county line."

Again I refer to the laws for the answers. Section 113-95 of the General Statutes states as follows: "No person shall at any time take any wild animals or birds without first having procured a license as provided by this article, which license shall authorize him to take game only during the periods of the year when it shall be lawful . . ." Note that the language of the first line of the quotation uses the words "shall at *any* time take *any* wild animals or birds." This should cover the question as to who must have a license, *except* those who hunt on their own property or are under age, and at the same time it indicates that either a county or statewide license *must be had* depending on whether the hunting is being done in the county of residence or not.

(Continued from page 17)

comprehension and no meaning.

The most tantalizing and challenging aspect of conservation today lies in the fact that we theoretically already have the knowledge to lay out an intelligent program for saving and using our natural resources, a program which is based on simple observation and logic. The problem lies in the unwillingness of most of the world's people to observe and their inability to reason; the solution lies in many years and many tears expended by many individuals.

The Fisherman

By MISS BONNIE ANGELO

(Courtesy Winston-Salem Journal & Sentinel)

MANKIND is divided into three parts: gentlemen, knaves, and fishermen. To understand just why this is it is first necessary to answer the important question, "Who is a fisherman?"

To begin with, he is a fellow who rises in the deep of night, puts his left shoe on his right foot, wakes the kids, snarls at his wife and then breakfasts on burnt coffee and black eggs.

When he leaves the house he heads for water just as if he used the stuff. The rest of the day is spent throwing hooks at fish. Generally the fish outsmart him, but he says it is fun. His wife outsmarts him too. She says it is easy.

He comes home at a time that requires a special supper and he goes to bed when he ought to be up and around helping the little woman with the dishes.

After a fishing trip a fisherman is a person to be carefully avoided. He is full of lies and eager to tell them to anyone who will stand still and listen. Other fishermen will stand still but they don't listen. They just wait around for a chance to get in some licks of their own.

When he is not sitting in a boat or dragging his BVD's through the water, a fisherman most often is found in a tackle store. That is where he spends his time and most of his money. He calls this "Getting equipped." People who have looked into his closet wonder for what.

The answer is for fishing. It takes many things to catch a fish. Rods, lines and lures are only the beginning. You also need thermometers, barometers, and hydrometers, a knowledge of ocean bars, isobars and open bars.

Fishermen must know the location of all creeks, runs, rivers, rills, and ABC stores. They also need a supply of hooks, books, utensils for cooks, creels, reels, and pickled eels.

They wear felt bottomed shoes, punctured waders, billed caps, shirts, jackets, and wet underwear. Farmers say they will carry away anything that is not nailed down. That is not strictly true, providing the object is not too heavy to lift.

They fish according to the moon, the sun, the tides, the wind, John Alden Knight, and the barometer. When all of those things are wrong, they fish in hail, snow, sandstorms and in posted water.

If they bring home a fish, it is only because they want their wife to clean it before they give it to a neighbor. If they fail to bring home any fish it frequently is because they saw the neighbor first.

It is said 'The truth is not in them.' This is wrong. It is there—but try and find it. They don't tell lies because they are fishermen. What's the difference?

Newspaper writers call them 'sportsmen' but newspaper writers are apt to say anything they can get by their editors. If a 250 pound tub of suet spending 10 hours outwitting a five inch fish constitutes sport, then we ought to legalize wife beating. Wives bite better than fish.

When you get right down to it men are divided into only two kinds—gentlemen and knaves. You place the fisherman.

The sketch, above left, was done by Arnold P. Sherrill, a student at N. C. University. Sherrill is a student of zoology and art, plans a career as a wildlife artist.—Ed.

According to experiments conducted by a Columbia University professor, the ten top ranking animals in the order of their respective intelligence are: chimpanzee, orangutan, gorilla, monkey, dog, cat, raccoon, elephant, pig, and horse.

FOR YOUR ATTENTION

BOOKS TO READ

By Roland McClamroch
President, N. C. Wildlife Federation

Two books which I unreservedly recommend to the readers of WILDLIFE IN NORTH CAROLINA are Verne E. Davison's *Bobwhites On The Rise* and *A North Carolina Naturalist* by H. H. Brimley.

Mr. Davison's book gives the hunter, farmer, conservationist, combined or individually, the answers to the quail problem. He writes from an intimate experience over many years devoted to trial and error procedures. Many ideas about the habits and the foods of quail, long held by arm-chair conservationists and experienced hunters, are demolished. For example, didn't you believe that nearby water was an essential for quail? However, Mr. Davison's treatment is constructive. After reading the 150 pages of his book you want to get out and try his suggestions. I, for one, plan to. That's what the book does to you. So don't read it if you are apprehensive about being aroused to the point where you feel that you can't live with yourself unless you get out and do something.

Dr. Odum's selections from the writings of H. H. Brimley, Curator and later Director of the State Museum, make an entirely different book. Yet it is one that enriches any reader's understanding of the value in the lives of each of the birds and animals that North Carolina fell heir to. This brief comment makes no attempt to encompass the fund of information, the delightful anecdotes, or the warmth and inspiration to be had from association with a true sportsman. Mr. Brimley's interests were catholic. Fishing for all species, hunting of all kinds, tramping, canoeing, camping—all come in for his discerning witty presentation. He is also a revealing portrayer of that strange fellow, the hunter and fisherman. In 1920 he wrote this:

"Many men of more than average intelligence—good, law-abiding citizens at home—seem to have the idea when they reach their favorite deer, turkey or duck shooting grounds that all game laws are for the other fellow! Any bird or animal that flies, swims or walks is a fair target for their ever-ready guns, and a grebe gets killed for a duck, a deer is shot in the water, and a hovering gull falls a victim just because it possesses organs of flight."

Didn't you run into this fellow during the past hunting season? I don't think you will be disappointed in this book.

Davison, Verne E., *Bobwhites On The Rise*, with illustrations by Wallace Hughes, Charles Scribner's Sons, New York, 1949. $3.75

Brimley, H. H., *A North Carolina Naturalist*. Selection from his writings. Edited by Eugene P. Odum, The University of North Carolina Press, Chapel Hill, 1949. $3.50

RADAR THROWS DUCKS OFF BEAM:

Scientists may be a step closer to solving the age-old mystery of bird migration as the result of experiments conducted with radar at the Delta Waterfowl Research Station maintained by the Wildlife Management Institute and Mr. James F. Bell of Minneapolis on the Manitoba breeding grounds.

Although H. Albert Hochbaum, director of the station, feels that experiments still are in such an early stage that no particular significance can be placed on results, interesting reactions of migrating ducks to radar beams have been noted. Portable radar equipment borrowed from the R.C.A.F. was used last spring to help trace the migration of birds. When highflying flocks of ducks struck the radar beam, they reacted in a peculiar manner. "We obtained at least a dozen positive reactions when the birds flared and broke, much as if they had been shot, when they hit the radar beam," Hochbaum reports. "The birds appeared to become momentarily confused in their flight, then they would regroup and continue on their way." Only migrating birds seemed to be affected. Birds considered to be natives of the vast waterfowl breeding marsh did not respond to effects of the beam, and radar seemed to affect only those moving along a regular migration route. Similar experiments are under way in the United States, and Hochbaum hopes to be able to obtain the radar equipment again next spring for further study into the phenomenon.

INSECTS DEVELOPING IMMUNITY TO DDT:

War-developed DDT, hailed in the press a few years ago as the answer to all problems stemming from noxious insects, is losing its effectiveness against some important pests, the Wildlife Management Institute reports.

Strains of houseflies and mosquitoes which are resistant to the insecticides have been reported from many parts of the world. After control operations cease, swamps or marshes sprayed appear devoid of mosquitoes. Freed of competition from less fortunate members of their tribe, however, the few immune survivors present breed and multiply until, in many places, they predominate. Ten times the amount of DDT needed to curl the toes of an ordinary *Aedes* fails even to stagger these hardy superskeeters. Heavy applications of DDT had little effect in controlling large swarms of mosquitoes at Cocoa, Florida, this year although spraying operations had been highly effective for five preceding years, the Department of Agriculture states.

WHEN IS A SNAKE NOT A SNAKE?

A NATURE SHORT

By ROD AMUNDSON

This glass snake was disturbed from its winter home by workmen who were digging a ditch. Although legless, it is really a lizard.

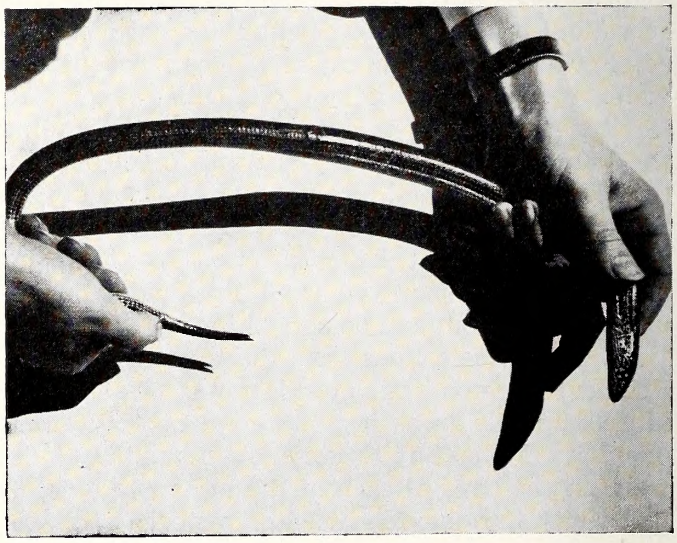
One of the most misunderstood of North Carolina's wildlife species, and not the least uncommon, is the glass snake. Even the common name given to the animal is a tribute to its mystery. The glass snake is not a snake at all, but a legless lizard closely related to the four-legged skinks which are common to the Tar Heel countryside.

Both words "glass" and "snake" are descriptive of the creature. It resembles a snake in appearance. Many a farm boy has caught one by the tail, only to have the tail break off next to the body and the lizard slither away through the grass while the tail wiggled in his hand. This brittleness of the tail vertebrae and lack of visible legs give rise to the name "glass snake."

Many people believe that once separated from their brittle tails, glass snakes can regain the missing member and by some means of magic, fasten it back on again. Such is not the case. The lizard simply goes about stub-tailed for a few months until a new tail has been grown, never as long as the original. The one illustrated here grew a forked tail, something extremely unusual for any kind of reptile.

Glass snakes are not poisonous. They are probably one of the most harmless of wild creatures. Their diet consists almost entirely of insects, although they may take small frogs and other amphibians. They lay their eggs in moist earth, and once the eggs are laid, the adult abandons the site and gives no further heed to the welfare of its offspring. During the winter months glass snakes go into hibernation, usually into an abandoned burrow or under a heavy layer of leaves and debris.

An examination of the skeleton of one of these creatures will disclose rudimentary legs, but there is no evidence of legs on the outside of the body. The scales are smooth and glossy, but never slimy. Like other lizards, the eyes of the glass snake have moveable lids.



The brittle tail may break off easily, and is replaced by a new growth. This lizard grew a tail with a fork in it.

ESCAPE

To be alone with my thoughts is my pleasure
As was wont by Nimrod of old;
No part would I have of the treasure
Where freedom is traded for gold;
I would break each formality's fetter—
Would strike each conventional chain—
No longer I'd live as a debtor
To the tyrant of barter and gain.

I would go where my own pleasure fancies,
Away from the din of the street,
I would seek out the wild expanses
Where man's and the Master mind meet;
From my mind I would wipe out all traces
Of work that never is done;
I would go to the wide open spaces—
Just me—and my dog and my gun.

—Anon.

(W.R.C. Photo by M. Fisler)

Above are the Wildlife Resources Commission officers for 1950. George W. Keesee, (center) of Gastonia, was elected Chairman to succeed Frank T. Erwin, Durham. At left is G. E. Beal, Red Oak, re-elected Secretary, and at right is D. K. Sing, Charlotte, re-elected Vice-President.

THE WILDLIFE RESOURCES COMMISSION

The Wildlife Resources Commission is a nine-man board appointed by the governor for overlapping terms so that no governor may appoint an entire commission. The state is divided into nine geographical districts. One commissioner represents each district. The commissioners serve without compensation except for expenses incurred attending meetings. They meet about once per month for the purpose of setting up the policies which comprise North Carolina's Wildlife Conservation program. Once a year they elect officers.

To carry out their policies, the commissioners appoint an executive director who is charged with the responsibility for converting policy into action. The executive director in turn appoints division chiefs, key men who are responsible for administering the work of six operational divisions. These men are responsible to the director for supervising the work of the personnel in their divisions.

The Wildlife Commission has established a five-point policy around which all activities revolve. These are: Regulation, Enforcement, Education, Management, and Research.

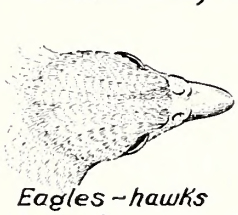
Approximately 200 people are on the Commission's payroll full time. This year's budget is over $1,500,000—none of which is derived from state taxes. Most of the money comes from the sale of various licenses, and some of it comes from the federal government through an excise tax on guns and ammunition.

The Commission's motto is: "More Sport For More People—Equal Opportunity For All."

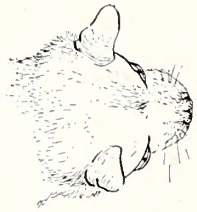
———o———

WILD EYES DESIGNED FOR LIVING

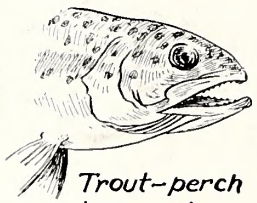
The type of eyes some animals have depends on whether they hunt or are hunted !



Eagles – hawks & owls

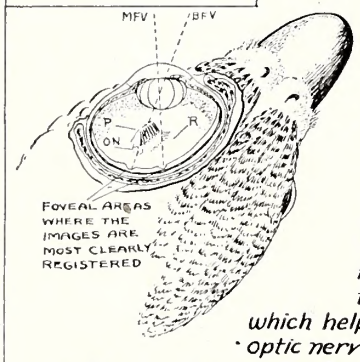


Cats – dogs – foxes

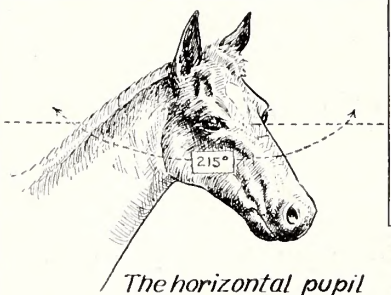


Trout – perch bass – etc.

Nature has brought the eyes of most hunting animals – birds and fishes forward in order that prey might better be seen by both eyes – this is binocular vision

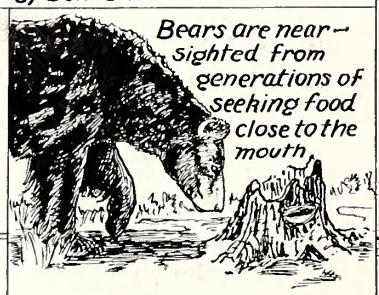


Certain hawks & eagles have special optical devices which give much clearer images – these are the pectin (P) and 2 fovea (clearest image areas) instead of one in many types of animal eyes – one is used for looking forward in binocular foveal vision (BFV) – the other for looking laterally in monocular foveal vision – the pectin casts a toothed shadow on the retina (R) which helps the eye detect motion – the optic nerve (ON) collects images from the retinal mirror and relays them to the brain – the ability to distinguish objects (resolving power) is up to 8 times greater than that of man



The horizontal pupil of the horse's eye helps to give him the greatest visual arc of any mammal The horse has binocular vision ahead and behind

Vultures see their food and do not detect it by sense of smell

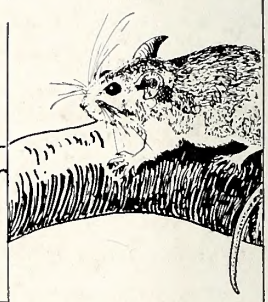


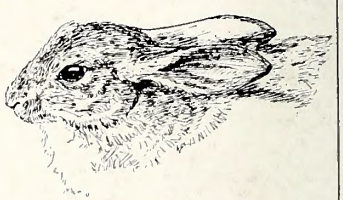
Bears are near – sighted from generations of seeking food close to the mouth

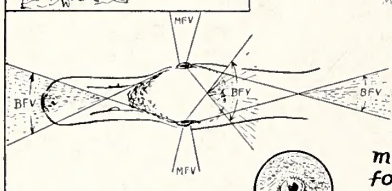
Emotional tears are peculiar to mankind and certain species of bears

Nature has adapted the eyes of hunted creatures to give maximum protection – the major adaptation is the location of the eyes with respect to the particular need

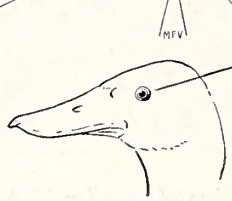
The bittern stands erect for concealment – the eyes swing forward to give this bird binocular vision under his chin



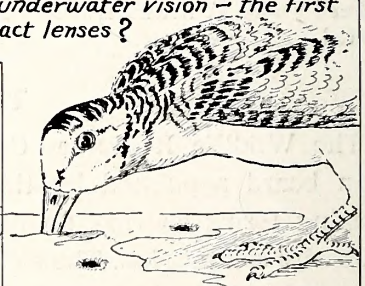




Most hunted species have eyes placed to provide a maximum visual angle – ducks other birds and animals have binocular foveal vision overhead and behind as well as ahead



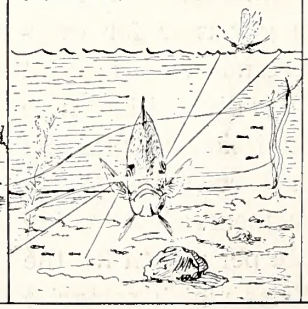
Birds have a third lid (nictitans) for additional protection to the eyes The nictitans of diving ducks have supplemental lenses to correct for underwater vision – the first contact lenses ?



Woodcock's eyes are near the back of the head because the characteristic feeding position of these birds is head down

Win Donat

The fishes' eyes see independently – color vision is not of greatest importance to fish.



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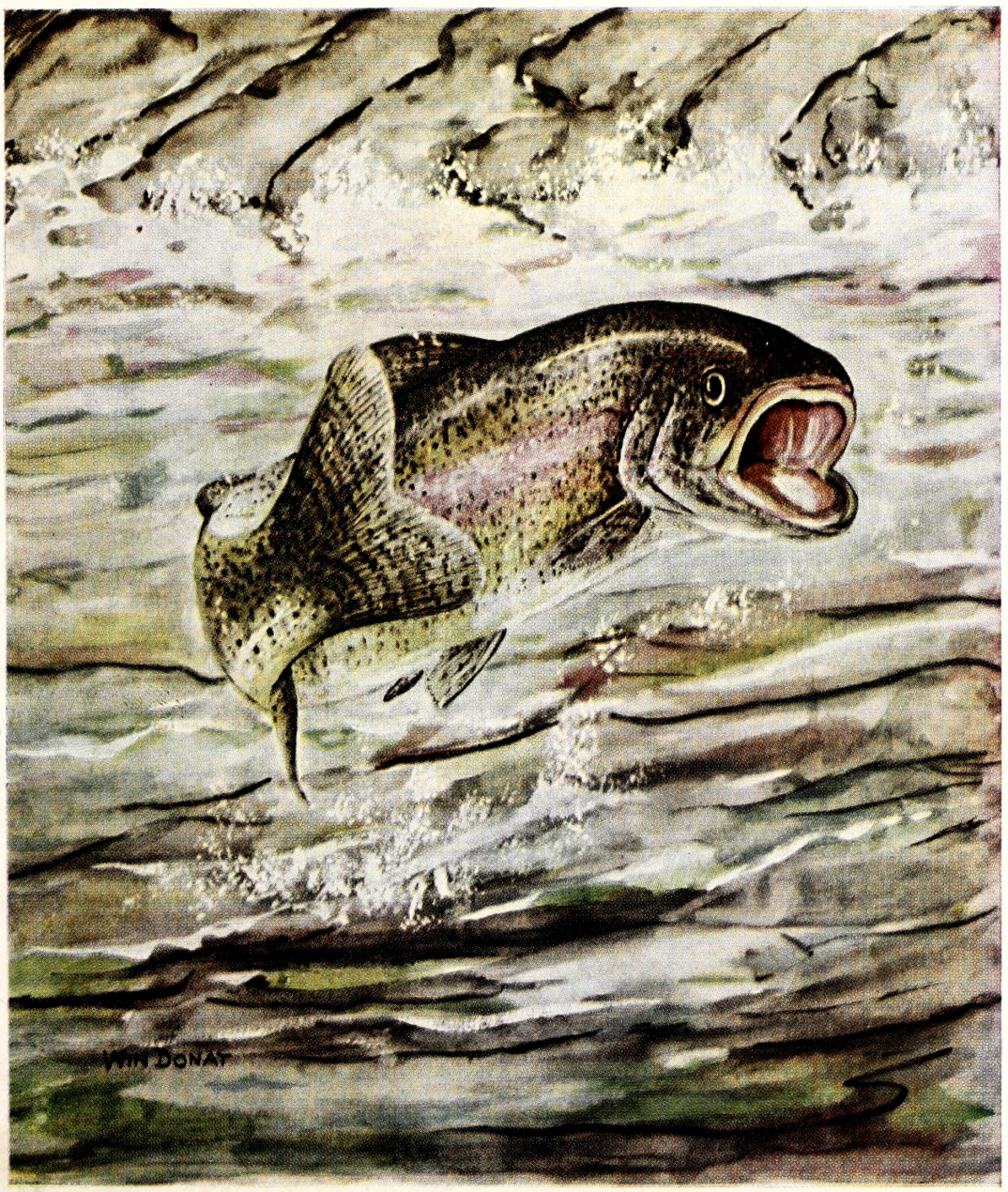

TEN CENTS APRIL 1950

Above are winners in a beagle field trial held by the Catawba County Beagle Club. Standing: Judge Willis Barnes, Field Marshal Brown Laney, Judge Sam Safreit; With dogs, L. to R.: Beryl Bishop with Hardin's Spindale Billie and Weyman's Captain; P. R. Ellege handling Parker's Jack; E. V. Garren handling Cheerful Dan; Mrs. Bishop handling Gary's Bob. The dogs were in the 13-inch, all-age class.

" . . . FORGET THE KILL."

"Enjoy the chase—forget the kill." That is the motto of the Catawba County Beagle Club, and the basis on which all field trial organizations operate. More and more sportsmen are learning that most of the fun of hunting is getting good fellows and good dogs together to have a wonderful time watching the dogs work. In this spirit, the kill of game becomes entirely secondary. Throughout North Carolina more and more sportsmen are becoming interested in field trials. They organize associations to run bird dogs, such as setters and pointers; rabbit hounds, such as beagles; coon hounds, deer hounds. The dog handlers and owners may be professional, or amateurs, and the dogs may be national champions or just good dogs. At any rate, everyone has fun, including the dogs. The taking of game becomes secondary. More important, field trial clubs spend time and money providing cover for game so that their dogs will have plenty of action in the field.

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THANKS!

—Ed.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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Governor

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COVER

J. H. Cornell, Chief of the Wildlife Commission's Fish Division took a color picture of a rainbow trout leaping in a pan of water. Win Donat used the color photo as a model for this month's cover.

★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

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SUBSCRIPTIONS — Fifty cents per year, one dollar for two years. Make remittances payable to WILDLIFE RESOURCES COMMISSION. Any employee of the Wildlife Resources Commission may accept subscriptions, or they may be forwarded to Post Office Box 2919, Raleigh, North Carolina. Stamps cannot be accepted.

★

April 15 marks the opening of the 1950 trout season. Trout are the only species of fish in North Carolina on which there is a closed season. One reason for closing the season is the heavy demand placed on trout streams by fishermen. During the closed season trout are stocked from hatchery production.

LET'S LEARN ABOUT OUR WILDLIFE

The Fifteenth of a Series on The Wildlife Species of North Carolina

HAWKS IN NORTH CAROLINA

By ROD AMUNDSON

ANY discussion of birds of prey in a publication such as this must be confined to the relationship between predatory birds, game, and above all, the hunters who affect or are affected by both. There are about fifteen important species of hawks and hawk-like birds living in or frequenting North Carolina; space does not permit a detailed discussion of each of the species. The best we can hope to do is discuss the various types of hawks as groups, and show how they relate to other wild species and to mankind.

In any language, names are the most important class of words. The name of any object or creature is frequently candidly descriptive; but sometimes the description is ambiguous, if not altogether false. In referring to hawks in general, most people add the word "chicken" to the title. This is frequently true of farmers, who have from time to time seen hawks steal chickens from their barnyard. All hawks, to farmers, are "chicken hawks."

Hawks are another classic example of the tendency of mankind to condemn an entire group of birds or animals because of the sins of a few. It is difficult to justify the unmolested existence of any species of life to people who firmly believe that the species competes with them for property or for sport. Here again, however, much of the condemnation arises from misunderstanding and lack of information.

A biologist working in a midwestern state became concerned when he saw, day after day during his travels, hawks hung up on trees and wire fences as symbols of warning to others of the kind. He knew that hunters were in the habit of shooting every hawk that came before their guns, believing that they were destroying harmful predators and thus protecting game.

During a year, this biologist identified and recorded the name of every hawk he saw while out in the field. At the end of the year he had a record of 366 observations. In looking through the names of the species, he found that only three of those 366 hawks were of a species which, because of their food habits, were not under the protection of law. Had he, like so many others, killed every hawk he saw, he would have killed harmless hawks at a ratio of over 99 beneficial species to one harmful variety.

Before beginning a defense of "beneficial" hawks, let's get this straight: from time to time some of the larger protected hawks do take barnyard poultry. No one denies a poultry raiser the right to defend his property by killing wildlife which takes his birds. A quail-breeder certainly cannot have hawks hanging about his bird runs looking for a quick meal. But let us remember that hawks are like other carnivorous species. They take their food where it is easiest to obtain. Individuals may learn

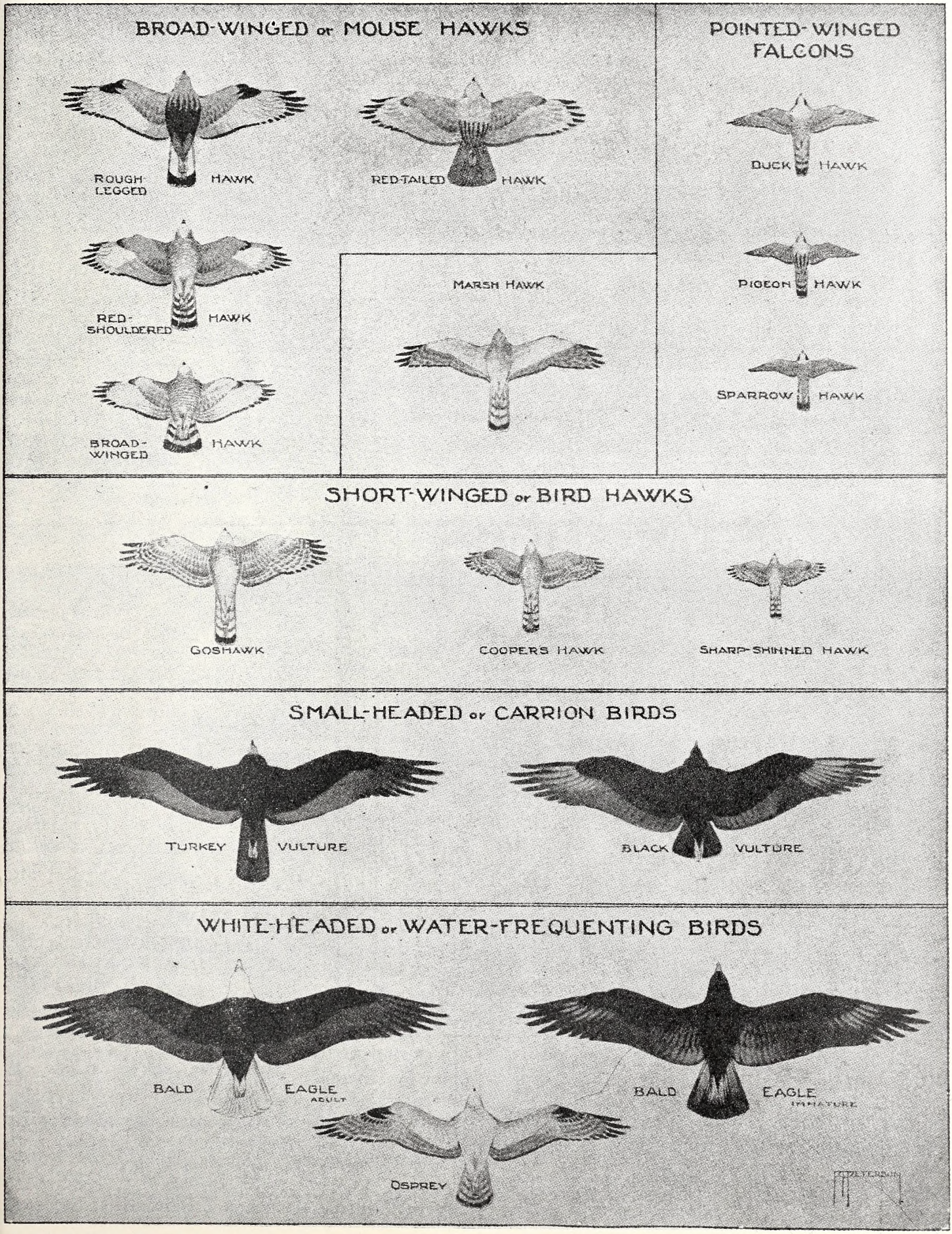
(Drawing by J. L. Ridgway, courtesy U. S. Fish & Wildlife Service)

The broad-wing hawk is a large bird, capable of taking game birds and poultry; it feeds almost entirely on insects, frogs, toads, snakes, and mice.

EASTERN HAWKS — *What They Look Like in the Air*

Atlantic Coast West to the Great Plains

All Birds Drawn to Same Scale



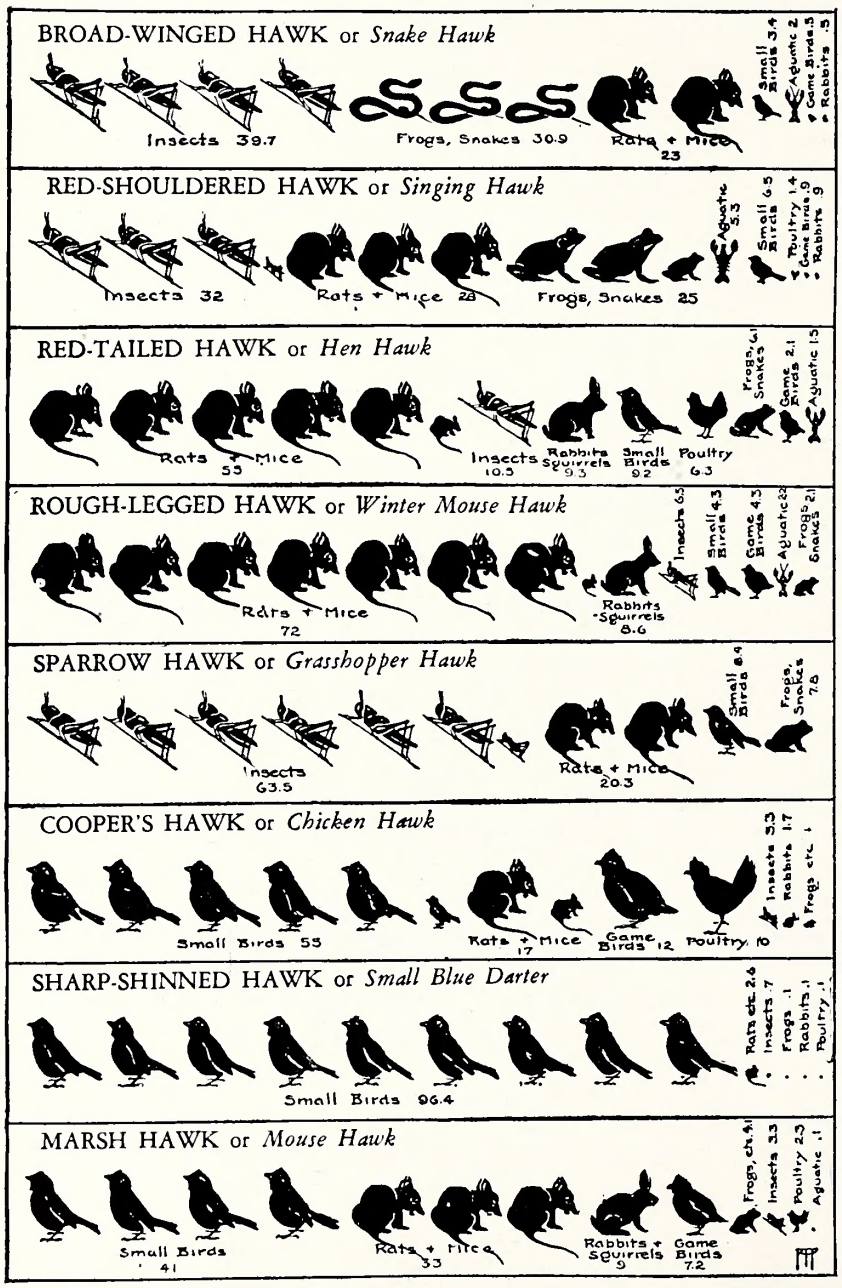
Some of These Hawks are Among Our Most Useful Birds

WHAT HAWKS EAT

Our Wildlife is in Your Hands

Nature has a place and a need for every Native Hawk. They are all part of our wildlife, and each plays an essential part in regulating the abundance of the animals on which they prey.

Based on studies by the U. S. Department of Agriculture, covering contents of 5,185 hawk stomachs. (See U.S.D.A. Circular No. 370, "Food Habits of Common Hawks," published 1935, price 5c, from Supt. of Documents, Washington, D. C.)



KNOW YOUR HAWKS

TRY TO INCREASE THE ONES THAT ARE NEEDED TO HELP US PRESERVE HEALTHY BALANCES IN OUR WILDLIFE POPULATIONS.

MOUSE HAWKS

SOARING IN CIRCLES
PERCHING IN OPEN
LARGE SIZE
TAMENESS
SLOW FLIGHT
WIDE WINGS
SHORT, BROAD TAIL

FALCONS

RAPID FLIGHT
LONG, POINTED WINGS
DEEP WING STROKE
STREAMLINED SHAPE

BIRD HAWKS

FLAP AND GLIDE FLIGHT
PERCHING UNDER COVER
DIRECT RAPID PURSUIT
SMALL SIZE
LONG TAIL
SHORT, BLUNT WINGS

MARSH HAWK

LOW COURSING FLIGHT
LONG WINGS AND TAIL
HIGH WING ANGLE

Species With Simple Feeding Habits:

VULTURES These useful scavengers eat only dead animals.

BALD EAGLE Our National Emblem is such a slow and heavy flier, that it lives chiefly as a scavenger, eating fish, carrion, and any sick or crippled birds and animals it is able to catch.

OSPREY Lives entirely on fish, chiefly non-commercial varieties that swim near enough to the surface to be caught.

Species That Are Generally Very Rare:

GOSHAWK A northern Hawk, coming south only in certain years. Eats poultry, game, rabbits, squirrels and mice.

DUCK HAWK Eats shore birds, sparrows, and other non-game birds. Now very rare. Don't shoot it!

PIGEON HAWK Eats small birds and insects. Is never common, and is too small to harm game.

Additional copies and further information may be obtained from the National Association of Audubon Societies, 1775 Broadway, New York, N. Y.

(Drawing by J. L. Ridgway, courtesy U. S. Fish & Wildlife Service)

The Cooper's hawk is not protected by law because of its habit of feeding on songbirds, poultry, and game birds. Fast fliers, Cooper's hawks do not soar.

that food is easier to get in a barnyard than in the field. Those individuals should be destroyed. But the fact that a few hawks get into the chicken-eating habit does not mean that the entire group should be mercilessly destroyed.

Here is a thought to leave with hunters before going into a more detailed discussion of the habits of the various types of hawks. Hunters kill hawks in the sincere belief that they are protecting small game. Some few may use this idea as an alibi for the desire to kill a moving target. But let's look at this angle. No less an authority than Stoddard, the dean of quail men in the Southeast, learned a very vivid lesson when he set up a refuge area for quail in a locality where quail had almost ceased to exist. Considerable attention was given to provide habitat for quail, and pen-reared birds were stocked. At the same time this was going on, Stoddard and his fellow workers carried on an all-out war against hawks until they were almost entirely eliminated from the quail refuge. But somehow there seemed to be no increase in quail. This went on for a number of years. Here was a good quail habitat, a good seed-stock of birds, and every other indication of a bumper crop of quail. But still no increase in quail.

Then someone got an inspiration. Perhaps there was no increase in quail because the hawks were all killed off! This may sound more like a hallucination than an inspiration, but to make the story short here is what had been going on. The area which had been set up as a quail refuge had supported a reasonable population of cotton rats. Cotton rats are notorious destroyers of quail nests. Hawks are natural enemies of cotton rats. When the hawks were killed off, cotton rats became so numerous that they destroyed quail nests wholesale. No wonder the quail did not increase. The hawk-killing campaign came to an abrupt stop, and hawks began making war on the cotton rats. The quail refuge became a paradise for quail! This episode is not the dream of a wildlife fiction writer. It actually took place and was recorded by highly-trained scientists. So perhaps hawks do take a quail or two; a few quail are a small price indeed to pay for a bountiful supply for the gun.

Unprotected Hawks

There are two species of hawks in this state which are not protected by law. They are the

(Drawing by J. L. Ridgway, courtesy U. S. Fish & Wildlife Service)

Another species not protected by law is the sharp-shinned hawk. It feeds almost entirely on songbirds, but is too small to cause serious damage to poultry or game.

(Photo courtesy U. S. Fish & Wildlife Service)

The marsh hawk takes considerable game, but more than makes up for this by feeding largely on cotton rats which are serious menaces to quail nests.

Cooper's and the sharp-shinned. One need only glance at the chart accompanying this article to see how these two birds differ in appearance from the beneficial species. In the air they do not soar. They keep to the woody thickets and fly with astonishing speed. They are bluish-gray over the back, and white below with brownish bars. They feed almost altogether on birds. Only the Cooper's is large enough to take poultry or adult game birds. The sharp-shinned is the smaller of the two, and feeds about 96 per cent on songbirds. Fortunately, neither species can be described as numerous. They are fast, difficult targets to the gunner, and few are killed by gunfire.

Mouse Hawks

Among the large, soaring hawks are four species residing in or visitant to North Carolina. They are the broad-winged, red-shouldered, red-tailed, and as occasional visitors, the rough-legged. Refer again to the identification chart for relative size and outline. These are the hawks most often seen about the countryside. When they are not soaring gracefully in the air they may rest on a telephone pole or a dead pine where they can survey the surrounding territory for food. The wing-beat is slow, and they cannot fly with ease through thick woods as do the Cooper's and sharp-shinned hawks. Now look at the food habits chart. Note that these birds feed largely on harmful or unimportant species, and only a very small percentage of songbirds, game, or poultry show in the list of foods. For example, the rough-legged hawk eats 72 per cent rats and mice, 8 per cent small game animals, 4.3 per cent game birds, and 4.3 per cent songbirds. In the analysis of thousands of stomachs of the species, poultry did not show up at all!

The red-tailed hawk is probably the one most deserving of the name "chicken hawk" or "hen hawk." But its diet is 55 per cent rats and mice, 10.5 per cent insects, and only 6.3 per cent poultry.

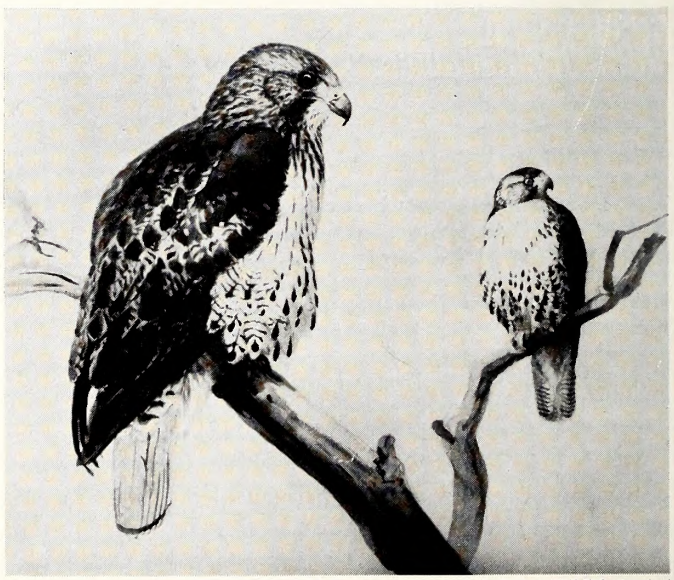
Marsh Hawks

Marsh hawks are of somewhat an in-between position. Over half of their diet is composed of valuable species. In their behalf, however, it should be pointed out that they are very fond of cotton rats, and for that reason are important to quail hunters. Cotton rats destroy quail when they are most vulnerable by eating the eggs. Marsh hawks may take quail now and then, but only in the young or adult stage. The food chart will show the relative amount of game birds eaten by marsh hawks.

Adult male marsh hawks are a dull bluish-gray with white underneath, while the females and immature males are brown over the back with whitish underparts. Both sexes are characterized by a snowy-white rump patch. They may be seen cruising close to the ground over swales and marsh lands in search of food. They are the only characteristically ground-nesting hawks.

Falcons

The tiny sparrow hawk is almost worthy of being called a songbird, except that its song is a harsh cry. It is a beautifully marked bird, a swift flier, and an inveterate eater of insects. Certainly no one could justify killing this beautiful bird by any stretch of imagination. It is a falcon, but the falcon speed is devoted to catching flying insects, occasional songbirds, rats, mice and frogs.



(Drawing by L. S. Fuertes, courtesy U. S. Fish & Wildlife Service)

The red-tailed hawk, often called "chicken hawk" takes some game, small birds, and poultry. It is vindicated, however, by an appetite for harmful mice and rats.

Two other falcons visit North Carolina rarely. They are the pigeon hawk and the duck hawk. These are larger birds than the sparrow hawk, and take their food on the wing. They are so rare, however, that they merit protection.

Eagles

A whole book could be written about the bald

(Drawing by J. L. Ridgway, courtesy U. S. Fish & Wildlife Service)

The red-shouldered hawk is another protected species. It visits North Carolina during the winter months. It too feeds on insects, rats, and mice.

eagle. Suffice it to say that the National Emblem is not numerous in this state, and that it feeds on carrion, fish, and crippled or sick birds and animals. It is protected by stringent state and federal law.

Vultures

Although vultures are not afforded legal protection in this state, few people would kill them. They live entirely on carrion, and are utterly harmless.

Fishermen may become envious of the angling skill of the osprey, but no hunter in his right mind would kill one. Ospreys feed entirely on fish, and almost all of the fish they take are non-game and non-commercial varieties. They are beautiful and graceful birds. It is a thrill to watch them dive from terrific height into the water and come up a moment later with a gizzard-shad or a sucker in their talons.

The Need For Understanding

Hundreds of books and magazine articles have failed to bring about among sportsmen a complete understanding of hawks and their relationship to other wildlife and mankind. But now and again sportsmen come to have a little more sympathy for these birds, and as time goes on more will follow the idea of giving hawks benefit of doubt if no benefit of sincere appreciation.

Here is one last appeal to anyone who might still be skeptical, a challenge to the man who is willing to see for himself, and believe. If every hunter who habitually kills hawks during his trips afield would take the trouble to open their stomachs and examine the contents, he would soon come to the conclusion that hawks are not the vicious killers of game he thought they were. He needn't be an expert to identify the contents of hawks' stomachs. He can recognize the bones and hair of the small animals the birds have eaten. He will find so little material from game birds that he will begin to doubt seriously that hawks are as bad as he had believed.

The whole subject of hawks is one which should be given careful thought, and these important birds should always be given benefit of doubt. When individuals damage poultry or game farm birds, they should be destroyed. All of them, at some time or other, may damage poultry, game, or songbirds. But we must remember that all but the unprotected species more than pay for any damage by helping to keep harmful rodents and insects under control.

Remember, the hawks you see most often are the beneficial species. Give them a break!

(Photo courtesy U. S. Fish & Wildlife Service)

The sparrow hawk is a very small, colorful bird, almost incapable of doing harm to valuable species. Its diet consists of insects, rats and mice, frogs, and rarely, small birds.

OWLS

We had planned to consider both hawks and owls in this month's issue. But the more we delved into the subject, the more apparent it became that the two groups should be treated separately. Next month, owls.—Ed.

PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

JUNIOR WILDLIFE CLUB NEWS

"OUR TRIP TO THE SANDHILLS WILDLIFE AREA"

The Junior Wildlife Club of Pinckney High School, Carthage, North Carolina, made an interesting trip to the Sandhills Wildlife Area, Hoffman, North Carolina. This area is managed by Mr. Jack Rivers.

When we arrived at the area, Mr. Rivers greeted us in a friendly way. He took us on a tour over the area over which we observed many interesting things about wildlife. We passed through a beautiful wooded area of long leaf pines.

The first place he took us was to a pond where we were shown a beaver dam and huts that were made of trees, leaves, sticks, and mud. Here Mr. Rivers asked us to tell him the purpose of wildlife resources. We told him what our idea was. Then he fully explained to us the purpose of it, by using, as an example, the farmer who retains some of his good corn for seed for reproduction of his crops from year to year.

Mr. Rivers told us that years ago there were many beavers in the state; but hunters continued to kill them in such great numbers that finally the state was depleted of beavers. However, a few years ago, a shipment of thirteen beavers was made to his area from Wisconsin. Of this number, one died, and a farmer killed another because he did not know what it was. The remaining ones have reproduced to the extent that other areas throughout the state are supplied with beavers by the Sandhills Area. No hunting of beavers is allowed in this area.

The manager (Mr. Rivers) told us some fascinating facts about beavers. Of the many things he told us, here are a few: (1) Beavers are better engineers than man in building dams. They can build a dam in from one to four weeks, depending on the sizes. We saw a dam that they had built, also two huts—one hut built underground, and one built in the shape of a mound. (2) Beavers are soft-furred animals. They have broad, flat tails, and feet adapted for swimming. (3) They also use their tails to put the "finishing touch" on their dams. Their tails firmly pat the sides of their dams in order to make them more secure. (4) These animals eat strictly vegetable matter, and willow and alder trees. (5) They are very awkward out of water. (6) The furs of a beaver are very valuable. It is worth about $175 00. (7) Beavers are not very harmful to man. Some of the harm that they do is to cut down a few valuable trees and to flood farmers' crops, at times. However, the good they do to man often overshadows the harm they do. (8) Beavers do not eat fish. (9) The life of a beaver is from eight to ten years. (10) It takes an expert to tell a female from the male.

When we left the beaver dam and huts, we observed the tracks of various animals. Mr. Rivers told us the differences in certain animals' tracks. We were especially interested in those of the fox. He then told us that the fur of the gray fox was less valuable than that of the red one.

We also saw tracks of the otter. Mr. Rivers said that an otter is from three to four feet long, including his tail. It is somewhat like a beaver, but more harmful in that it eats fish.

PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

We were taken to a farm where we saw a field of lespedeza—bi-color and the serecia lespedezas—and rows of multiflora rose. Mr. Rivers explained the uses of the different plans as follows: The lespedezas are valuable as a builder of roads, soil, and washed away lands, and as food for wildlife, especially quail. The multiflora rose is good for fencing. After a few months of growth, this plant, if used as a fence, can hold almost any type of animal.

Not far from this location we observed tallow trees, the seeds of which were used for song birds. Mr. Rivers gave us samples of the plants and trees. Each member took a sprig of the lespedeza and multiflora rose home and set it out. For the majority of us, these plants are beginning to grow.

Our last trip was to a fish hatchery where we were unable to observe the activities of the fish due to the condition of the weather and the time of year.

The trip to this area was such an enjoyable one, and our report on it to the club was so interesting that members have decided to return to this area in the spring for an overnight stay to observe further developments of wildlife in this area.

Reporters: Emma C. Kelly
Shirley Caddell
Wilson Taylor
Henry Blue

"Wildlife" is eager to get stories from schools who have organized Junior Wildlife Clubs. Brief news notes on club activities are preferred, and the more pictures the better.—Ed.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

NORTH CAROLINA'S 124 FISH AND GAME PROTECTORS ARE ATTENDING A SERIES OF TWO-WEEK TRAINING COURSES HELD AT THE INSTITUTE OF GOVERNMENT, N. C. UNIVERSITY, CHAPEL HILL. THE LAW ENFORCEMENT STAFF HAS BEEN DIVIDED INTO THREE GROUPS SO THAT WHILE ONE GROUP IS ATTENDING CLASSES THE OTHERS CAN COVER VACANT TERRITORY.

THE SCHOOL IS THE FIRST OF ITS KIND EVER HELD IN NORTH CAROLINA, AND IS PART OF THE WILDLIFE COMMISSION'S PLAN TO INCREASE THE EFFICIENCY OF ITS LAW ENFORCEMENT WORK. THE OFFICERS ARE GETTING INTENSIVE TRAINING IN LAW, ARREST AND PROSECUTION, SEARCH AND SEIZURE, COLLECTING AND PRESENTING EVIDENCE, COURTROOM PROCEDURE, SELF DEFENSE, FISH MANAGEMENT, GAME MANAGEMENT, EDUCATION, PUBLIC RELATIONS, FIRST AID, FIRE FIGHTING AND PREVENTION, AND GENERAL ADMINISTRATION. ALTOGETHER, EACH MAN WILL RECEIVE 108 HOURS OF TRAINING.

OFFICIALS OF THE N. C. WILDLIFE RESOURCES COMMISSION AND THE U. S. FOREST SERVICE MEET ON APRIL 5 TO SET UP SPECIAL REGULATIONS ON TROUT FISHING IN THE NATIONAL FOREST AREAS IN WESTERN NORTH CAROLINA. THE 1950 TROUT SEASON OPENS APRIL 15 AND FISHING IN THE FOREST AREAS WILL BEGIN ABOUT TWO WEEKS LATER. THE SPECIAL TROUT REGULATIONS WILL BE PRINTED AS SOON AS THEY ARE AGREED UPON. PERSONS WISHING TO OBTAIN COPIES OF THE SPECIAL RULES SHOULD WRITE TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH.

SEVERAL OFFICIALS OF THE N. C. WILDLIFE RESOURCES COMMISSION ATTENDED THE SPRING MEETING OF THE SOUTHEASTERN ASSOCIATION OF FISH AND GAME COMMISSIONERS AT ATLANTA GEORGIA MARCH 27 AND 28. IN CONNECTION WITH THE ASSOCIATION MEETING WAS A PUBLIC HEARING CONDUCTED BY DR. CLARENCE COTTAM, ASSISTANT CHIEF OF THE U. S. FISH AND WILDLIFE SERVICE, FOR THE PURPOSE OF HEARING THE OPINIONS OF SPORTSMEN AND CONSERVATIONISTS REGARDING THE 1950-1951 WATERFOWL HUNTING REGULATIONS.

AT THE COMPLETION OF THE FIRST SEASON OF LIVE-TRAPPING RACOONS IN EASTERN N. C. COUNTIES AND TRANSPLANTING THEM TO WESTERN COUNTIES WHERE MORE RACOONS ARE NEEDED, BETWEEN 450 AND 500 ANIMALS WERE THUS TRANSPLANTED. WATCH FOR A STORY ON THIS ACTIVITY IN A FORTHCOMING ISSUE OF "WILDLIFE."

AT THE SAME TIME RACOONS WERE BEING TRAPPED AND TRANSPLANTED, THE COMMISSION ENGAGED IN TRAPPING DEER FROM AREAS CLOSED TO HUNTING OR WHERE A SURPLUS OF DEER EXISTED AND TRANSPLANTED THEM TO LOCALITIES WHERE SUITABLE HABITAT WAS AVAILABLE BUT NO DEER WERE PRESENT. FINAL FIGURES ON THE NUMBER OF DEER TRANSPLANTED WERE NOT AVAILABLE AT PRESS TIME.

A mechanical digger loosens seedlings so they can be lifted from nursery bed.

The Wildlife Resources Commission ...roduct... 4,000,000 seedlings were sent this sprin... throu...

Seedlings sent long distance are wrapped to retain moisture.

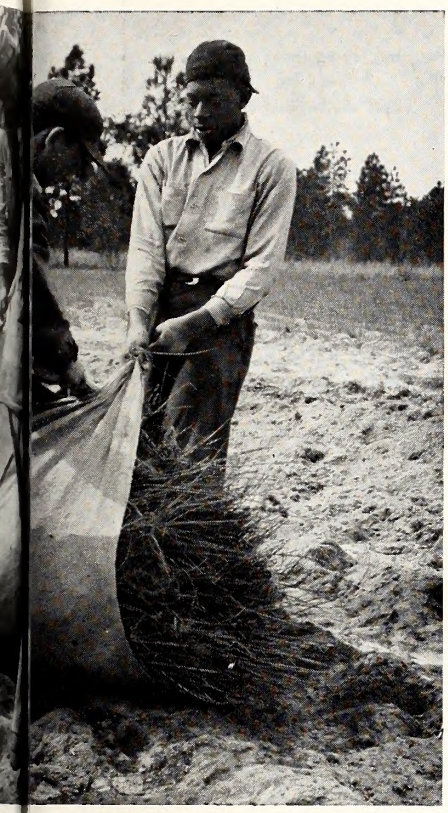
Sportsman's ...

PLANT ... SP... WHERE YOU ... IN ...

Quail and rabbit hunting this fall will be improved where ... and sp... cover for game. This year's production of bicolor lespedez... ...reatest ... increased again next year. Cooperation between sportsmen ... the ... hunting in future years.

Freshly dug from nursery, seedlings are hauled to shipping plant. Although plants look dead, they are very hardy and soon begin growing when planted.

Here is how bicolor strips planted this spring will look this fall. In one growing season, bicolor produces real game cover.



production of bicolor lespedeza. Over
s throughout the state.

Bicolor seedlings are sorted, counted, and tied in bundles to facilitate shipment to farmers.

→

↑ After being tied in bundles, plants which can be delivered direct to farmer are put in heeling beds for safe keeping until delivery date.

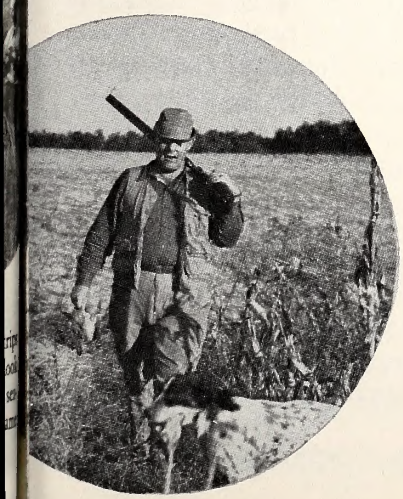
pring Slogan

TE SPRING
U IN THE FALL

and sportsmen got together this spring to provide good
reatest since the farm game program began, and will be
nd the Wildlife Resources Commission will assure good

(Photos by Margaret Fisler)

The payoff of spring plantings comes in the fall's hunting. Habitat plantings are the most efficient way to produce more game. ↓



↓ Light trucks are used to deliver bicolor plants to farmer. Shown here is a farmer receiving his quota of seedlings.

THE INTRODUCTION OF FOREIGN GAME BIRDS

NORTH CAROLINA STATE LIBRARY

By CLYDE P. PATTON

Executive Director, N. C. Wildlife Resources Commission

Frequently the question of importing exotic species comes up among sportsmen. Although this article was written 10 years ago, the facts about imported game birds still hold true.

WITH increased hunting pressure during recent years has come a gradual decrease in the supply of native game birds and subsequent demands have been registered for the introduction of many species of foreign or exotic game birds to supplement present native populations and better supply the public need. Many people, particularly sportsmen, advocate the introduction of the chukar and Hungarian partridge and ring-necked pheasant. For the United States it has been estimated that over a million dollars have been spent in trying to establish the Hungarian partridge alone. Some degree of success has been encountered in a few of the western states but indications are that none of these birds are adapted to the humid Atlantic Coastal States, including North Carolina.

Unlike many other conservation agencies and individuals the North Carolina Department of Conservation and Development has always believed that home pastures were greener than foreign ones —that native birds were far superior to exotic species. In following up this belief, they have instigated the Farm Game Program which gives much consideration to the improvement of the environment for native game birds and animals. This, together with careful regulation of the annual kill, helps the native breeding stock now present on the land to provide a surplus and supply the demand for more game birds. No money has been spent by the Department for the liberation of artificially propagated foreign species. Restocking with exotics attempted by conservation agencies in other states has met with varying degrees of success.

PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

The Chukar Partridge

Being first introduced into the United States from Karachi, India, in 1893, by W. O. Blaisdell, a few chukar partridges were liberated at Macomb, Ill. the following spring. Reports on the successfulness of this liberation are not available. In 1928, at San Francisco, California, Frank E. Booth introduced some chukars direct from India. Since 1930 and particularly during the past three years, attempts to establish the species have been made in all but ten states of the union. So far it appears that the birds are better adapted to barren rocky hillsides west of the Mississippi River. Reports from neighboring states including Virginia and Georgia where chukars have been tried by state wildlife agencies have indicated that the birds liberated did not make a satisfactory establishment and soon disappeared. During the past two years a few releases in North Carolina made by individual sportsmen, including Thomas A. Morgan and Thurmond Chatham, have not shown favorable results thus far.

Twenty-four chukars were released on the Morgan property, Vance County, about May 1, 1939. Being observed frequently in the area of liberation for the first three or four days they began to scatter rapidly and pairs were observed at Townsville, two miles away, and at Williamsboro, four miles distant. During the summer two nests containing 14 eggs each were located on the Morgan property. In one nest the eggs were destroyed by an unknown predator, and those in the other nest hatched 11 chicks. Gradually decreasing until only four or five remained, the chicks were last seen when they were about three-fourths grown. The last report on these birds stated that none had been seen recently anywhere in the vicinity.

Three hundred and forty-five chukars released in 1938 and 1939 on the Chatham property in Wilkes County are said to have shown no indication of establishment.

An important factor to consider in the introduction of an exotic bird is the possible competition with native species. The chukar being a larger and somewhat more vicious looking bird, it might be expected that severe competition would occur between this species and quail. In states where they have established themselves and have been observed on the same range with quail, no competition was noted.

Chukars have a definite inability to endure cold weather and apparently cannot readily adapt themselves to climatic conditions. In captivity their food habits are about the same as for our native bobwhite but their food preferences in the wild are not definitely known. The ultimate success of the chu-

kar partridge in the United States is still in doubt but it seems to have a better chance of becoming established in the states west of the Mississippi River. In North Carolina it is not advisable to attempt further introductions until evidence for its adaptability to conditions in the Southeastern states is brought to light.

Other Exotics

It has been said that as many as 270,000 Hungarian partridges have been liberated in the United States, releases having been made in almost every state. The greatest success in establishing this bird has been attained in the northwest and in the north central states from Ohio to Washington. Being partial to fertile agriculture grasslands and prairie country the "hun" cannot tolerate heavily timbered areas or those having excessive rainfall. In North Carolina a few releases have been made by individual sportsmen, but the birds were not able to endure the humid conditions in this part of the country. Of much interest are the efforts made by Thurmond Chatham, Winston-Salem, North Carolina to restock his 500-acre farm at Ronda, Wilkes County, with various kinds of exotic birds. Lying in a large bend of the Yadkin River the Chatham farm was initially developed in an attempt to make conditions most attractive to all kinds of wildlife. The bottom land was divided into fields of 25 to 30 acres by planting hedges of evergreens and deciduous shrubs. Strips of soybeans shallu, sunflowers and kaffir corn were left adjacent to the hedgerows. In addition, areas of from two to three acres were planted to a mixture of the above crops.

These developments having been completed, an extensive restocking program was begun and releases of foreign game birds were made as follows: in 1936, three hundred ring-necked pheasants; in 1937, two hundred and fifty ring-necked pheasants and three hundred and fifty melonistic mutant pheasants; in 1938, two hundred and twenty ring-necked pheasants, one hundred melonistic mutant pheasants, and seventy-five chukar partridges; and in 1939, one hundred melonistic mutant pheasants, seventy-five Formosan pheasants and two hundred and seventy chukar partridges. In a report on these experimental releases, Mr. Chatham states that a majority of the birds have either been taken by vermin or have strayed away. Pheasants are said to have been seen as many as 20 miles from the area of release and chukars as many as five miles distant.

The success of these introductions cannot be optimistically commented on, but food and cover developments on the farm have proven to be of great benefit to the native bobwhite. The improvements are said to have accounted for an increase in the quail supply to 30 coveys on the 500 acres.

Our State can boast of having a huntable surplus of three of the finest native game birds in America, bobwhite quail, wild turkey, and ruffed grouse (Mountain Pheasant). Why spend time and money trying to bring in other birds which might possibly compete with and drive out our native birds?

To those who wish to see empty coverts filled, might we suggest that they follow the trend in game management and try natural propagation methods on the native birds best suited to their interest.

Reprinted from *North Carolina Wildlife Conservation*, Volume IV, Number 7, July, 1940.

Note: Although ring-necked pheasants have been stocked in several parts of North Carolina, only one instance has been reported recently of these birds having become established. A few pheasants are reported to be living among the sand dunes on Cape Hatteras. Although it is doubtful that they will ever increase to numbers permitting an open season, it is possible that they will propagate from year to year.

DO YOU HAVE BACK ISSUES OF WILDLIFE

To complete our permanent files we need copies of the October 1948 and March 1949 issues of "Wildlife in North Carolina." We would be very grateful to persons having extra copies of these editions for sending them in so that file copies may be bound.—Ed.

"Whut kind of animal is that following us?"

LEAVE THAT *Woods Baby* BE

Don't adopt bear cubs, bobcats and fawns. If they don't get you, the game protectors will.

By William L. Worden

Reprinted courtesy Colliers Magazine

THE filling-station owner swelled with indignation. This was positively the last straw, the ultimate in government interference with a man's private affairs. The mule deer he had picked up as a fawn was as tame as a dog, like one of the family, a pet of the whole community—and a legitimate lure for tourist business.

The state game protectors, Cossacks that they seemed, remained unimpressed. The law was clear, possession illegal. The deer was moved to a state game refuge located at Squaw Creek, Washington.

It was not quite the end of an old, old story. The mule deer sniffed the protected range and vanished into the woods. He didn't come back for three days. Then, apparently for no reason, he decided he disliked an elderly caretaker who hauled feed for the animals out to a meadow with a tractor. When he attacked the tractor the first evening, it was mildly funny. Head lowered, the deer charged, not stopping until his antlers banged against the frame of the machine. The driver merely stayed aboard, not daring to get off until he was safe within barnyard fences. He was a patient man. During the next week he stayed aboard the tractor every day when the animal launched an attack, and didn't complain to anyone.

A game protector—call him Jones—and a deputy sheriff wished he had. In the middle of the following week they were walking across the game refuge, checking the size of an antelope herd, and the big mule deer attacked them. Jones was butted in the stomach and the deputy suffered a six-inch gash in the hip. The buck dragged them all over a 40-acre field before they managed to kill it.

"We hated to do it," Jones said, "but I wished that filling-station man had been around. I wondered how many youngsters had played with that animal before we got nasty and took it away from him."

This is not an extreme example of the tragedy which almost invariably follows the great American practice of playing mama or papa to a poor little lost woods baby. The repeated shouts of game experts across the nation that the woods baby isn't poor, isn't lost and certainly won't stay little have almost no effect. Still the happy citizens pick up fawns, bear cubs, young raccoons, skunks, even bobcat kittens. Still they continue to be surprised when their thoughtfulness is not appreciated by the animals or state game departments.

In Allegany County, New York, alone, 57 fawns were picked up in 1949 before the middle of July—57 who would have been perfectly all right if left where they were, and who are now doomed. In the whole of New York State, the "rescues" totaled nearly 200 for the first half of the year. Washington, Oregon and Idaho counted pick-up fawns in the hundreds; and in California, the habit reached "epidemic" proportions according to a game department estimate.

A young fawn, surprised in the woods, drops by instinct and plays dead until the danger is past. Meanwhile, the doe tears off through the woods to decoy danger away from her young. Only when the danger is past will she return—but she definitely has not abandoned her child. It is a simple system, as old as the race of deer, and works fine except against simple-minded humans; but they keep picking up the babies and there is always hell to pay.

Here is what usually happens:

1. The rescuer discovers that what he has done is against the law in almost all states. Picking up or possession can bring a $500 fine and six months in jail in California, and there are similar penalties elsewhere.

2. Pleading ignorance, the rescuer turns the fawn over to the state game department. A fawn drinks at least a quart of milk a day and soon begins to eat approximately as much grain and hay as a small horse. (A bear cub takes four quarts of milk daily.)

As soon as the fawn seems to have a chance for survival alone, the state attempts to put it back in the woods. This is where the rub comes. Deer almost never go wild a second time.

In Washington State, game workers once put fawns on an uninhabited Puget Sound island, gradually decreasing amount and frequency of feeding. The theory was that the deer would gradually learn to forage for themselves and eventually would be both hungry enough and wild enough to swim to some other forested island or the mainland. Even this was only a qualified success. Other states, without such handy islands, dump deer off trucks in remote backwoods, chase them with dogs—anything to get them to go wild.

A STATE OFFICIAL says, "I estimate we have about 95 per cent total failure. If the deer does not wander into some town, get killed on a highway trying to make friends with an automobile or starve

This doe was captured in the woods when it was a fawn, and is now a problem to its owners. The fawns were sired by a wild buck.

to death because he does not know how to look for food, he never makes it through the first hunting season. There are always plenty of hunters who think it's great sport to shoot a deer just as he walks up looking for a lump of sugar."

Newspaper files are full of stories of what happens if the fawn is raised as a private pet, legally or illegally. Once a deer has lost his natural fear of dogs, he is more than a match for any ordinary neighborhood pooch—and the records of friendly cockers or yapping poodles slashed viciously to death by "pet" deer take columns of newsprint.

Nor are dogs the only victims. All buck deer are dangerous in mating season. At New York's Delmar Game Farm several workers have been seriously cut by captive bucks. A gardener near Sheridan, Oregon, died under the lance-sharp hoofs of a pet. Deer never learn about houses and are as likely to bed down in the living room as in the barn. This is funny to tell, not so funny to housewives.

Even if your pet displays no bad habits, tragedy still stalks him. An Idaho resort owner now has tamed half a dozen does. Each year he does it over again, because the old pet always gets shot by some hunter in the fall. Even attaching a red hat to the deer's head never has done any good. "The way I figure," the resort man says, "that hat just gives them something more definite to shoot at."

For bear, the story is still a tougher one. Almost no cubs are abandoned in the forests. The lonesome little guy you see on the forest highway probably has a mama not too far away. She may not show herself—or she may. If, just as you pick up the ten-pound tyke, three or four hundred pounds of very displeased maternal instinct charges out of a berry patch, don't say you weren't warned.

ONCE TAMED, bears never can be taught to go wild again. In New York three cubs were liberated. They raided campsites, invited themselves to picnics and chased a woman halfway up a fire tower. In the end, the state had to trap all three—one after a year of steady depredations. Now, given to the state, the friendliest cub has only two possible fates—life as an unhappy captive in some zoo, or slaughter because there is no place he can be sent.

In some states bear can legally be kept as pets; but at your own very considerable risk. In Seattle, Richard Strand, eight, was killed by a pet bear in 1945. The bear weighed only eight pounds when

(Continued on page 21)

Photo Courtesy U. S. Fish & Wildlife Service

Cub bears are cute, but they may grow up to become dangerous. Once tamed, bears never become wild again.

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

My Grandfather often said "you learn to swim in winter and to ice skate in summer." Applying this saying to the point of this paragraph, and planning now for next winter's program, I want to hear from every group in this state who sponsors a dog trial of some sort. It makes no difference whether or not the trials are recognized by a national association or whether they are for all sorts of hounds, bird dogs or retrievers. Likewise, it is not important that you be a member or officer of such a group—*if you know of such an activity taking place anywhere near you, please let me know.* The reason for the urgency of this appeal revolves around a project of direct importance and benefit to the sportsmen of North Carolina which may be put under way soon —IF YOU WILL HELP US TO GET THE NECESSARY INFORMATION. You will get more details after we can get some idea of how great an interest you have in hunting dog trials. Remember, the sooner you send me this information, the quicker we can get rolling on something you will enjoy!

W. D.

Mr. D. McL. G., of Trenton, N. C., asks, "I have read several articles in the past on flies and fly fishing for shad. Please, since I've forgotten what I read, tell me the type of flies to use and the kind of water to fish; by kind of water I mean running, still, shallow, deep, etc. . . ."

Since there have been several requests of this nature, and since there are probably many anglers who are curious about this subject, I am going to take some space to give what information there is at hand.

First, there are two important points to be believed. Shad will take artificials, and the field of experimental angling is wide open as no universal procedure has been established. My experience and the writings of others show fast waters such as rocky rapids or the white water below a dam or sluice gate to be productive, yet a method of trolling in dark waters twenty-five feet deep has been successful.

Equipment may be either of the bait casting spinning or fly casting type, *but it must be rugged.* It is amazing what a five pound roe shad can do to a fly rod and half hour battles are not unusual. Wet flies drifted downstream from a dam or cast across stream into fast water are allowed to sink as they drift and the favorite colors are silver tinsel bodies, with bright red, yellow or orange hackles or yellow bucktail streamers. These may be used with either gold or silver spinners and nearly always at least three bright red cut glass beads are threaded on the leader ahead of the fly. Silver finished hooks are popular with some anglers. In addition, such artificials as the fly rod silver spoon, Trix-Oreno, Pippin Wobbler, and similar lures are effective on occasion.

The deep fishing in still water is new to me and is described by a man fishing in Southeastern deep water rivers as follows: A plastic line was used with the leader about nine feet long and with a small silver spoon for a lure. This rig was trolled from a slow moving boat either rowed or propelled by an outboard. It is most important that the lure be trolled near the bottom and the only action given to the lure is a few sharp jerks on the rod. The lure was trolled about forty yards behind the boat in water about twenty-five feet deep.

Again, I ask if any of you fellows develop anything in the art of catching this sporting fish on artificials, will you let me know?

Mr. R. M. L., of Albemarle, N. C., asks, "Several of us are

talking about building a skeet field and the question came up about the distance that shot carry and I wonder what your ideas are . . . ?"

This question has several angles such as: Whether skeet loads only are being discussed, or shot loads in general. Both are applicable to the average skeet field, particularly in view of the fact that while often personal ammunition is used and it easily can be seen that where a 300 yard safety radius might be satisfactory for a standard trap load, it might be less than half enough distance if some shooter decides to use up some old twos or fours. The safe area around most skeet fields is based on a 300 yard radius and at that distance, anything smaller than sevens and one-half should fall harmlessly.

Mrs. J. D. J., Jr., of Greensboro, N. C., writes, "I am hearing more and more about heartworms in dogs and as we have two fine setters, I am anxious to know how the presence of heartworms can be determined . . . is there a cure for them?"

Heartworms are believed to be transmitted to dogs by means of insect bites and these internal parasites are much more prevalent in the southern states, although their range is moving northward. A dog may be infested with heartworms long before he has any visible symptoms. When these appear, they take the form of listlessness, lack of stamina and sometimes a hacking cough. A thorough microscopic examination of blood specimens is the best means of determining their presence. All dogs exposed to swampy country should be examined every six months. If detected in the early stages, heartworms can be controlled with complete success, that is, if they are detected before they have grown too large to have progressed to the larger blood vessels near the heart.

David and Goliath?

A tale heard in Rocky Mount recently concerns a nice bass which was whipped into a nub and just about drowned by a four-inch bream. It seems that a Nashville, N. C., fisherman was disturbed by a fuss on the surface of the water near him and upon investigation he found a fine bass on his side, on his last lap to bass heaven. It was no trouble to pick the fish out of the water and to learn how the little guy had done it. Apparently the little fish wriggled during the process of being swallowed and its head was directed out of the gill opening where the body became lodged, thus causing an interruption of the breathing apparatus.

How About It?

Do you know of any interesting things about our wildlife? How about the comic things that happen on trips afield, or unusual events you have seen. Don't write a long story—just send the facts together with your name and address to me.

Here is a suggestion for keeping minnows. The idea comes from Roy L. Younts, Deputy Fish and Game Protector, Greensboro, N. C.

I would like to suggest an idea for all live bait fishermen. I have used this system for a year and a half and found it very effective all year 'round. I've found this to be very helpful when I am going fishing and only have a short time and also when I do have to buy minnows. The ones I do not use I can save until another day.

I do not know if my idea is original or not, but at least it is to me.

The following information is what I would like to extend to all sportsmen:

First, I obtain a large oil drum with one end out, then I thoroughly clean it out. Then digging hole the circumference of the drum, I bury the drum three quarters of the way in the ground. This is to keep water cool during the hot months. I then put approximately two inches of sand in the bottom of drum and a couple of four pound rocks. Then I puncture eight (8) holes the size of a straw four (4) inches from top of the drum. I then fill the drum with water using a hose pipe, and get a water lily from a lake and place in the water (this is to supply oxygen).

The tank is now ready for the minnows. I have kept as many as 60 to 100 minnows effectively for weeks. I have some minnows at present that have been in my well for eight or nine months.

These minnows should never be fed as food will ferment and kill minnows.

Additional water should be run slowly into drum every two weeks.

I hope this information will aid my fellow sportsmen.

DREXEL CLUB ACTIVITIES

By Ruffin C. Hoyle

The Huffman Bridge Hunting, Fishing and Boating Club was organized in October 1949, with 28 charter members. We elected Charlie Eller for president, and Bill Russell for vice-president. We got a lease, from Duke Power Company, on a piece of land 500′ by 250′, at the Huffman bridge, two miles north of Drexel.

We have plans to develop this into one of the nicest clubs in this area. We are making a picnic area, which will be open for all churches and social clubs. There are now about 175 members and new ones joining all the time. We have had two shooting matches and they were both very successful.

Included in our plans for the future are a light plant, running water, locker rooms and a concession stand. There will be prizes given for the biggest fish caught. We plan to have a fish fry in the near future. All the sporting goods stores have helped us by giving prizes for the shooting matches.

The club wishes to thank the North Carolina Wildlife Reserve Commission for its cooperation in their recent visit to Raleigh, pertaining to taking of rough fish in Lake Rhodhiss.

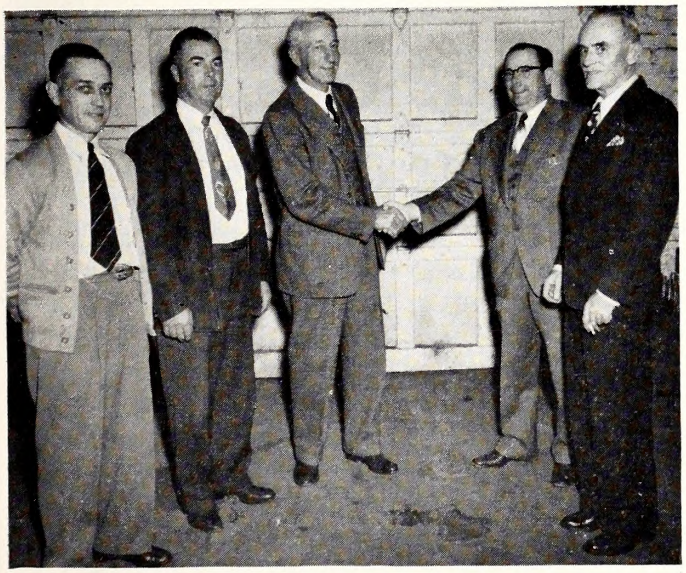
PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

ALBEMARLE FIELD TRIALS

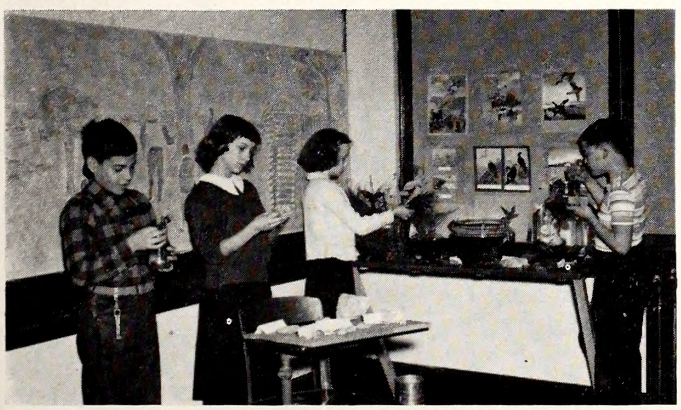
Above are winners in the Albemarle annual field trials held in February. L. to R.: 3rd place tie, Frank Marbry's "Don's Coconut" and Hugh Morton's "Skyrocket's Little Lady;" 2nd place, J. D. Tucker's "Jack;" 1st place, Ralph Marbry's "Anne's Bob."

Above, L. to R., Open Puppy Stake winners: Dr. J. M. Golden's "Toynot Bell," 1st place; Clyde Furr's "Equity," 2nd place; H. N. Clark's "Sunrise Pat," 3rd place. Left: Despite a cold drizzle, the field trials drew a large crowd, were considered successful.

Officials of the Mimosa Fishing Club, Morganton, met with Wildlife Resources Commission officials recently to discuss fish management problems in Lake James. The Mimosa Club has over 1200 members. A story of this club will appear in a forthcoming issue of "Wildlife."



J. C. Small (3rd from left), is congratulated by District 1 Commissioner Orville Woodhouse on his election as president of the Pasquotank County Wildlife Club. Small is a Pasquotank County farmer. At left is Joe Pool, re-elected club secretary, and Al Etheridge, vice-president. At extreme right is Major J. L. Murphy, district chairman of State Wildlife Federation.



Students of Pinckney High School, Carthage, study wildlife in the classroom.

(Continued from page 17)

made a pet, but weighed out at 250 when he became a murderer. In Pikesville, Maryland, a "pet" bit Mary Louise Hastings, aged four. Her leg had to be amputated. At Saint Helens, Oregon, W. Peterson's

Besides growing up to become dangerous nuisances, fawns consume a quart of milk a day. This adds up to expense.

bear got to be so little a pet that Peterson made him into steaks, without a qualm. At Otisville, New York, a bear turned on a little girl who had bottle-fed it from babyhood. The girl died.

Coons sometimes can be liberated successfully, but the state of New York had 40 to get rid of in midsummer this year. As pets they are unreliable. In Mount Rainier National Park, a one-eyed coon lives under an inn porch. Rangers warn everybody —and then go get the bandages. The coon's record of bitten fingers and scratched arms grows daily. (In national parks, incidentally, the crime of picking up young wild animals is the most frequent law violation except speeding.)

If you must pick up something, most wardens and rangers have a recommendation. Find a nice butterball of a porcupine. They are fascinating, maintain no noticeable family ties, have cute button noses and will eat anything. They will not run away.

But if they do not teach you a lesson with their fat, maneuverable tails in the first five minutes, bud, you're unteachable.

Note: "Wildlife in North Carolina" is indebted to the editors of Collier's magazine for the use of William L. Worden's excellent article. Although it was written for a national audience, the principles apply in North Carolina. In this state pets may be made of wild species legally only by first obtaining a special permit to keep game.—Ed.

MARION HATCHERY STEPS AHEAD

By Maurice Bryant, Jr.

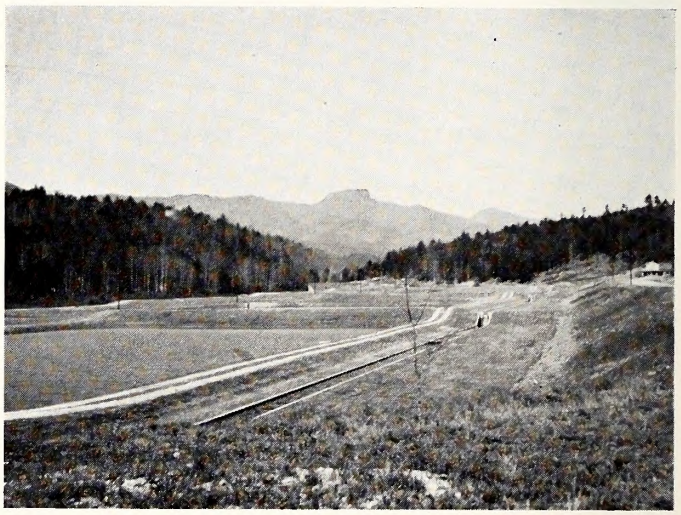
Associate Fish Biologist

The North Carolina Resources Commission's State Fish Hatchery at Marion is about to embark on a sea of new progress in the field of Fish Culture.

Those who remember the hatchery in its early days would not recognize the place as it is today. The old, small frame building is gone, and in its place stands a new modern brick structure, housing offices, garage, workshop, feed room, locker and washroom, laboratory, and large hatching room. Considerable landscaping has been done, and outside rearing facilities are ready and in operation. All is in readiness for a banner year of fish production.

Mr. Luther Skaggs, superintendent, aided by John Reid Queen and Eugene Mathis, hatchery assistants, plan to hatch one million trout eggs this winter. The resulting fish will be held until late spring when the water becomes too warm for trout, at which time they will be transferred to other stations having colder water, for further rearing. In addition to these fish, about 25,000 large trout fingerlings are being wintered at the hatchery in large dirt ponds and will be stocked in the waters of the Southeast Blue Ridge area during the coming fishing season as six to eight inch fish ready for the fisherman's creel. Early next summer these same dirt ponds will be turned over to the spawning and rearing of bass and bluegill sunfish.

Another new feature of the hatchery has been the addition of a fisheries laboratory to be operated by Maurice Bryant, Jr., Associate Fish Biologist, who has recently been employed by the Wildlife Resources Commission to supervise the western hatcheries, with particular emphasis on hatchery management and coordination, feeds and feeding, and disease control. Mr. Bryant was formerly employed by the U. S. Fish and Wildlife Service, coming to North Carolina from the Service's experimental station at Cortland, N. Y., where he worked under Dr. A. M. Phillips, Jr., Chief of Fish Nutrition Research.

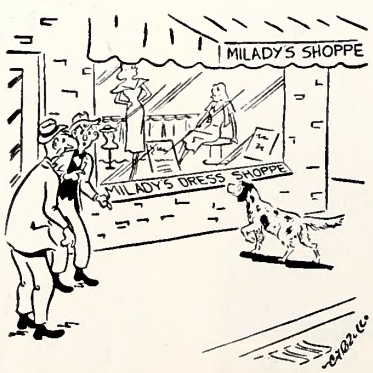


Situated at the foot of beautiful Table Rock, Table Rock hatchery is one of North Carolina's beauty spots. Trout are hatched and wintered here, bass and bluegills are planned.

Mr. Bryant will be ably assisted in his work by Mr. Hayden Ratledge, Jr., Biologist, who is at present stationed at the Table Rock Fish Hatchery in Morganton. Mr. Ratledge has been doing considerable work on a stream and lake survey program this past summer.

As a result of these and other forward steps, fishing in North Carolina should definitely be on the upswing. At least, the Wildlife Resources Commission under Director Clyde P. Patton is making every effort within its power to give the sportsmen the best conditions possible for continuing their sport.

"I can read everything but the top two lines."



"My wife trained him."

"I guess we shouldn't have shot at them."

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NEW INTERIOR DEPARTMENT SECRETARY
- IS A CONSERVATIONIST

By Michael Hudoba

(Editor's Note: MICHAEL HUDOBA, the representative of the OWAA in Washington evaluates the impact on the conservation problems of the nation with the appointment of a career man as Secretary of the Interior in the person of Oscar Chapman.)

Oscar L. Chapman's elevation to the Cabinet as Secretary of the Interior marks a significant event to the federal management of our natural resources.

The Interior Department not only begins its second hundred years of resource management, but does so under the administration of a man who is one of the nation's leading conservation authorities.

Interior Secretary Chapman, a careerist of 16 years in the Department, rose to the number two post of Under Secretary, during which time he has been on the work and sweat end of most of the nation's resource problems and decisions.

Throughout he has consistently shown a broad outlook on resource problems, and has persistently urged the needs for stepped up conservation-restoration programs.

From his top and key spot in the administration, we can now hopefully expect the development of broad-gauged resource conservation policies.

Of direct importance to fishermen and hunters, Oscar Chapman becomes the final word on Fish and Wildlife Service decisions, since the Service is one of the many Bureaus in that Department.

Fortunately Mr. Chapman has shown a familiar, keen and direct interest in fish and wildlife.

In fact, he was the sparkplug behind bringing those interested in fish and wildlife conservation into conference with Interior Department officials to exchange views on issues affecting outdoor resources, and then implemented the program with formation of a resource advisory committee, representing organizations dealing with outdoor resources to advise the Department.

Secretary Chapman's first words spoken after taking the oath of office December 1, 1949, before a capacity filled auditorium of the federal administration's "Who's Who," were a plea for and direct commitment to the wise use and conservation of our natural resources.

Oscar Chapman, whose ready smile and friendly manner make him one of the best liked men in Washington, further pinpointed his interest in fish and wildlife by a statement coincidental with his inauguration to the sportsmen of this country through the columns of Sports Afield magazine.

There is solid meat here in the framework of his statement that merits the support of those interested in preserving the outdoor opportunity. It shows that he, one of the best administrators in federal service, will press for the integration of fish and wildlife into the troublesome programs such as reclamation, etc., that have so often in the past reacted to the detriment of these resources.

Interior Secretary Chapman says, "Throughout the sixteen years of my association with the Department of the Interior I have felt a keen and sympathetic interest in the problems of fish and wildlife conservation, knowing that the stability of these resources affects so many people in this country and the rest of the world. As Secretary of the Interior, I shall have an even greater interest and a more direct responsibility for the welfare of the nation's fisheries and wildlife. I intend to see that the values of this resource continue to be given prominent consideration in the water development programs of the west and other sections of the country. Although the Federal Aid to Fisheries bill failed to become law, I believe that a way may still be found to provide this much needed assistance to the fresh water fisheries of the country. The adequate management of waterfowl resources will continue to be one of the major interests of the Department, and we will continue our policy of assistance and cooperation in the management of other game resources by the various states. As conservation of all natural resources becomes more and more a world problem, in which cooperative efforts toward conservation are increasingly essential, the Department will continue its efforts to develop suitable treaties for the conservation and management of appropriate resources through international agreement."

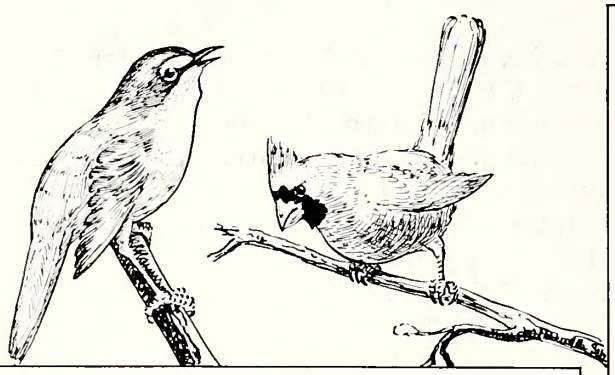
Your reporter applauds Mr. Chapman's promotion as having the most direct promise for careful consideration of the sportsmen's problems.

PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

Next fall's hunting will depend entirely on the success of the breeding stock of game this spring and summer in bringing forth a new crop of game. Providing suitable habitat for game is the surest way of providing good hunting in the years to come. Do your share!

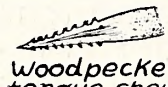
WORKING TOOLS OF THE BIRDS...

SPECIAL FOOT AND MOUTH ADAPTATIONS



The feet of perching birds are adapted to holding the birds on stems or branches and the bills are slender for catching insects or short and heavy for picking seeds and berries — the shapes and sizes of bills vary according to the type of food eaten

The woodpecker's head, bill, tongue & toes are fitted to his feeding habits — the bill is a chisel the tongue a barbed spear — the head is equipped with shock absorbers and one toe swings back to give him two in front and two to the rear

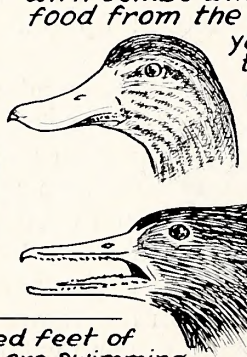


Woodpecker's tongue showing barbs for extracting larvae from holes in wood

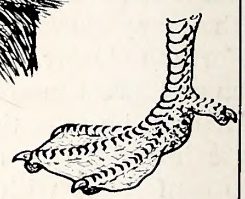
The beaks of eagles, hawks & owls are designed for tearing the flesh of their prey or carrion — while their feet are powerful and are equipped with sharp strong talons for seizing and killing their prey

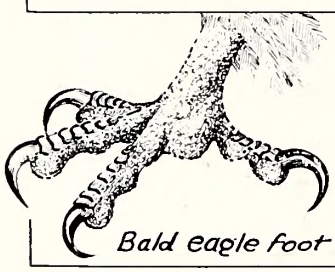
The nighthawks and swifts have gaping mouths with funnels of fine hairlike feathers which help them to catch insects on the wing at night

The bills of most ducks are equipped with combs which strain their food from the mud and water yet the bills and tongues of the fish-eating ducks have backward curved spines which help them to eat fish

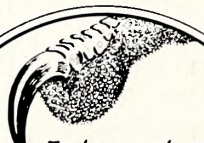


The webbed feet of wildfowl are swimming & diving aids & steering & balancing aids in the air

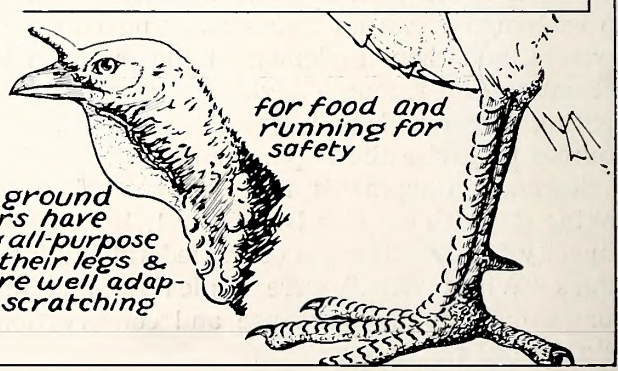




Bald eagle foot



Enlarged view of an osprey's toe showing sandpaper like undersurface which permit the bird to grasp and carry slippery fish - these birds are excellent divers



The ground feeders have strong all-purpose bills — their legs & feet are well adapted to scratching for food and running for safety

Win Donat

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Wildlife
IN NORTH CAROLINA

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TEN CENTS

MAY 1950

"SPRINGTIME AND A YOUNG MAN'S FANCY . . ."

. . . may or may not turn to thoughts of love. But if he is anywhere between the ages of eight to eighty, he will doubtless begin to think about fishing. All of North Carolina's trout fishing began on April 15, and thousands of anglers trekked to the beautiful trout streams in the western part of the state to try for the wary trout.

There is more to trout fishing than the mere catching of fish. Anglers can enjoy the crisp mountain air and drink in the beauty of scenery that is world-renowned.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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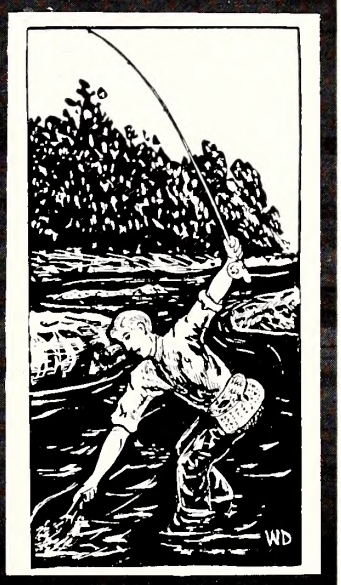

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COVER

Win Donat has shown his love for dogs in painting this remarkable portrait of his Chesapeake Bay Retriever, "Chessie." The original was done in oil. Since dogs are impatient models, Win used a series of photographs as a guide.

★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★

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★

We are grateful to the many people who helped to increase our mailing list by using the subscription slips which appeared in last month's issue. 17,000 copies of *Wildlife* came off the press in this issue.

ROD AMUNDSON, Editor

LET'S LEARN ABOUT OUR WILDLIFE

The Sixteenth of a Series on The Wildlife Species of North Carolina

North Carolina Owls

By ROD AMUNDSON

Photos Courtesy U. S. Fish & Wildlife Service

"A wise old owl sat in an oak.
The more he saw, the less he spoke
The less he spoke the more he heard;
Now, wasn't he a wise old bird?"

General Characteristics

FORTUNATELY, for owls, they are almost entirely nocturnal birds. Thus they escape much of the gunfire from hunters that otherwise might be directed toward them. Like hawks, owls are birds of prey. They feed almost entirely on other birds and animals. Because now and then they attack small game and barnyard fowl, they receive considerable invective and persecution.

Owls differ from any other bird type in several respects. All of them have very soft, downy feathers which enable them to descend silently on their prey. A mask-like arrangement of feathers about the eyes, called a "facial disc," gives them a characteristic "wise" appearance and causes the group to be given credit for a great deal of sagacity. Where most birds have their eyes located so that they can see to the side as well as forward, owls' eyes are set so that they must turn their heads to see from side to side. To compensate for this handicap, nature has provided owls with necks which can turn nearly 180 degrees. The beaks are curved, sharp-pointed, and powerful, an ideal combination for the tearing of flesh. The powerful feet are armed with curved claws as sharp as needles.

Like hawks, owls swallow small items of food whole. Where larger items, such as large rats or small rabbits, are taken, the flesh is ripped from the bones by the heavy, hooked beaks, and swallowed with the skin, feathers, or any small bones that may be attached.

Undigestible portions of food are regurgitated in the form of pellets. These pellets provide an excellent device for biologists to study the content of past meals of owls without having first to destroy the bird which ate the meals.

Altogether there are nearly a hundred species of owls native to the North American continent, but only five species are common to North Carolina. A sixth species, the snowy owl, sometimes comes this far south in winter when food in its northern range is scarce. The five common species are: Screech owl, Great Horned owl, Barred owl, Long-eared owl, and Saw-whet owl. A seventh species has been recorded as being present in the state from time to time. It is one of the most unique of birds, the Barn owl.

The saw-whet owl is such a sound daytime sleeper that it may be easily captured from its perch. It is North Carolina's smallest owl.

The Great Horned Owl

Other common names of the great horned owl are: hoot owl, Virginia owl, Virginia horned owl, and cat owl. The Scientific name is *Bubo virginianus*

virginianus. The word "Bubo" means eagle-owl, no doubt a reflection on the size and power of the bird. The great horned owl is the largest native owl, with a wingspread of up to five feet and a body two feet long. Its size enables this bird to kill wild creatures up to the size of wild turkeys. It has a seemingly insatiable appetite, and its predatory nature has forfeited any right to legal protection. The most that may be said in favor of the great horned owl is that it eats larger numbers of pestiferous rodents, such as cotton rats and field mice. Whether a balance exists between the harmful and beneficial eating habits is a matter of speculation. Some individuals may feed largely on game species while others may eat mostly small rodents. At any rate it would be tragic to condemn the entire breed to extermination. Great horned owls seldom become numerous enough to cause really serious damage.

The manner of obtaining and eating food is characteristic of the owl group. Swift, silent fliers, they swoop down on their prey and deliver a fatal blow, either with clenched talons or with a death-dealing grasp. Small creatures, such as frogs or mice, are swallowed whole. Larger prey is ripped apart with the hooked beak, and eaten entirely, bones, feathers, fur, and all. The digestible portions of the food are passed on to the gizard. Bones, hair, or feathers are assembled into a capsule-shaped pellet and regurgitated. The regurgitation phenomenon has made food habits study of owls by scientists a simple matter. A naturalist pursuing a study of owl diet has only to find a roosting tree and collect the remains of meals for the past several days or weeks, depending on the amount and frequency of rainfall. Species which have been eaten by the owl can be identified from the remains found in the pellets. In recent years naturalists have begun to conclude, from the evidence of pellet examination, that great horned owls do much less damage to game than they have been given credit (or discredit?) for.

Like most other owls, great horned owls leave the matter of nesting to chance. They may appropriate the abandoned nest of a crow, a hawk, an osprey, or some other large bird. They may simply select an inaccessible ledge on a cliff, a hollow tree, or a small cave.

Eggs are usually two in number, and incubation begins when the first egg is laid. The second egg may be deposited several days after the first, with the result that the downy, homely youngsters may be widely separated in size. The nestlings have huge appetites, and keep the parent birds busy stuffing food into their maws. It is during the parenthood period that great horned owls commit their most telling acts of piracy.

The voice and vociferous nature of the great horned owl has undoubtedly given rise to more ghost stories than any other wild creature. There are few people today who could walk alone at night past a lonely cemetery, hear a couple of owls hoot at each other, and not undergo a rapid rise in pulse rate. The call of the great horned owl may vary from a series of "hoot-hoot, hoot-hoot" to "hooo-too-hoooo!" or "hooo, hoo, hoo, h-o-o-o-o!" The sound must be heard to be appreciated; once heard it will not soon be forgotten.

The Screech Owl

The screech owl is a much smaller bird than its horned relative. The wingspread is about 22 inches and the body only nine inches long. Like the horned owl, it has well-defined ear tufts which can be erected or flattened to the head. The characteristic eye discs are present, and there are clearly defined white eyebrows extending from either side of the beak over the eyes. These give the bird a frowning, determined appearance.

The call of the screech owl is more of an eerie wail than a screech. The voice is very loud and penetrating for such a small bird, and on a clear night the call can be heard long distances. Like most of the other owls, the screech owl is a night flier. It is one of the farmer's best friends, being almost constantly in search of field mice and other small rodents. During severe winter weather when heavy snow makes mouse-hunting almost impossible, screech owls will attack other birds, and have even been known to prey on quail. Such instances, however, are rare indeed. In Iowa during an unusually severe winter, with heavy snow and a long period of sub-zero weather, a screech owl was seen to attack a full-grown Rhode Island Red rooster. It attacked the rooster under the wing, and inflicted severe damage to the larger bird. The farmer who owned the rooster shot the screech owl. Its stomach proved

The great horned owl is our largest owl, and one of the fiercest of birds. Although not numerous, these owls take small game and poultry.

A young great horned owl sitting in its nest, in this case the stub of a broken tree.

to be entirely empty except for some blood which it apparently had gotten from its unwilling host, and the body was extremely emaciated.

The Saw-Whet Owl

The saw-whet owl gets its name from its unusual voice. The call is very much like the sound of a file being rasped over the blade of a large circular saw. It has other calls, soft, chuckling gurgles and subdued screams. Most of the vocal activity goes on during the mating season.

Saw-Whet owls are strictly nocturnal. They sleep so soundly during daylight hours that it is an easy matter to catch one on his perch. Like the screech owl, the saw-whet is an avid mouser, and being a couple of inches smaller in body length and wingspread, probably never attacks game birds. It does, however, take squirrels and small rabbits. Its favorite food is the white-footed mouse. Saw-whet owls are nowhere numerous, and therefore not serious as predators on game. They do not migrate, but wander far afield during the night in search of food. Because of their nocturnal habits they are seldom brought down to gunfire.

The saw-whet owl resembles the screech owl in size and general coloration, but does not have ear tufts.

The Barred Owl

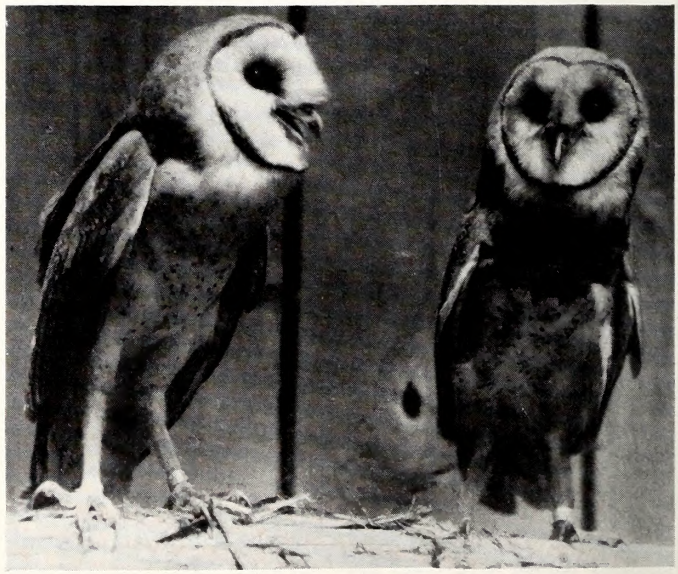
This is a larger bird than the screech and saw-whet owls, but smaller than the great horned owl. Its body length is about 20 to 21 inches, and the wings span from 43 to 45 inches. The upper parts of the body are dark gray-brown with small yellowish-white bars, hence the name. The head has a rounded appearance, and there are no ear tufts.

The barred owl is a resident of the dense woodlands, frequently near small lakes and streams. It is one of the noisest of owls, surpassing the great horned owl in vocal accomplishment. The voice is a series of loud, sharp hoots which may end in a drawn - out "HOOOOEEEEEEEYAAAAAAW!" To vary this repertory is a series of clucks, chortles, bill-clicking, and spine-tingling screams. Many persons who learn to imitate the calls of these birds have a great deal of sport calling them up during hours of darkness. The birds apparently become highly irritated at being mocked, and will give vent to their entire repertory of noises, including maddened clicks of the powerful beak.

Although barred owls are large enough to take game, they prefer to feed on rats, mice, frogs, lizards, and small birds. Although hours of darkness are their favorite for activity, they may be seen flying about on dark, cloudy days.

The Long-eared Owl

The owl and the pussycat have long been associated by legend and literature. There is a definite resemblance, particularly in the owl species with long ear tufts, and the habit of prowling at night.



Because of their unusual facial feather arrangement, barn owls are often called "monkey owls." They are excellent mousers, and definitely beneficial.

The long-eared owl bears out this resemblance. It is a large bird, 15 to 16 inches long, with a wing span of up to 40 inches.

The long-eared owl is perhaps the most beneficial of the owl species. Its diet consists almost entirely of rodents, and it has an enormous appetite. Whereas most other owls are solitary by nature, the long-

eared owl tends to be quite gregarious. At certain times of the year they may be seen in fairly large groups.

A further resemblance to the feline tribe is the voice of the long-eared owl. It emits a series of cat-calls, not unlike the mewing of a small kitten. This may be varied to sharp, high-pitched yelps like those of a frightened, small dog. At mating time the call becomes a soft, low whoooooo.

The Barn Owl

Although barn owls are rather rare in North Carolina, they are discussed here because of their interesting appearance, behavior, and their value to mankind. Barn owls get their name from the fact that they are willing to take up residence in any barn, church steeple, or any abandoned building which will provide them with a dark corner in which to make their homes and rear their young.

The barn owl takes the characteristic mask or facial disc of all owls to the extreme that they are often called "monkey owls." The over-all color is a light buff with darker markings, of gray, brown and white, so that the general appearance is mottled.

Barn owls measure about 18 inches from beak to tail, and have a wingspread of from 40 to 44 inches. The feet are developed into powerful clinging weapons armed with large, sharp claws. This is generally true of all owls, but in the barn owl the pedal development is especially marked.

Barn owls have ravenous appetites. A single bird will eat its weight in rats and mice in a single night. The farmer who has a pair of barn owls nesting in an outbuilding is doubly fortunate; the owls must not only feed themselves, but care for several ravenously hungry offspring. A pair of barn owls will far outdo several barnyard cats in keeping rats and mice down—and they won't beg for fresh milk or table morsels between meals.

Young barn owls are even more droll in appearance than their parents. These are in a nest in a small cave.

Snowy Owls

Only rarely do snowy owls visit North Carolina. The snowy owl is a native resident of the cold Canadian climate, and comes this far south only when a shortage of its natural food occurs. They are definitely a novelty in this state. So few of them come here that any possible damage they might do to game is far outweighed by the thrill they provide to lovers of wild creatures. The snowy owl is even larger than the great horned owl. It is aptly called "the white ghost of the night" by Canadian Indians. Swooping silently on his prey, it strikes terror into the hearts of small birds and animals. But to North Carolinians, fortunate enough to see it so far south of his natural range, it is a sight long to be remembered.

Summary

It is well to emphasize that man must take into consideration all of the many aspects of hawks (see April, 1950, WILDLIFE) and owls. They do at times commit acts which place them in competition with men. Many become definitely harmful and merit destruction. But by and large, the whole group of birds of prey fill a very definite place in the scheme of nature as created by Almighty Providence. Tolerance, reasoning, and understanding will keep these creatures in the place intended for them without ever providing an excuse for cruel persecution.

SOME MIRACLES TO PONDER

(Note: Congressman Joseph P. O'Hara, of Minnesota, inserted this poem in the Congressional Record of January 3 (Page A12) with the comment that his constituent, Mr. Davis, is 90 years old, and has practiced law for 67 years.)

Who planned the mechanics
That prints without fail
The white on the tips of
The cock robin's tail?
And who do you think fixed
That beautiful thing,
The red on the bend of
The blackbird's wing?
And how?

Who planned for the black on
The meadowlark's throat,
Which comes by a rule that
No man ever wrote?
Who planned the contrivance
From dust of the earth:
That brain for your thinking
You had at your birth?
And why?
—Leroy G. Davis

Once a hated pest in cities, the English sparrow has become so scarce in recent years that some ornithologists are worried about their disappearance.

PRACTICAL *Wildlife Management*

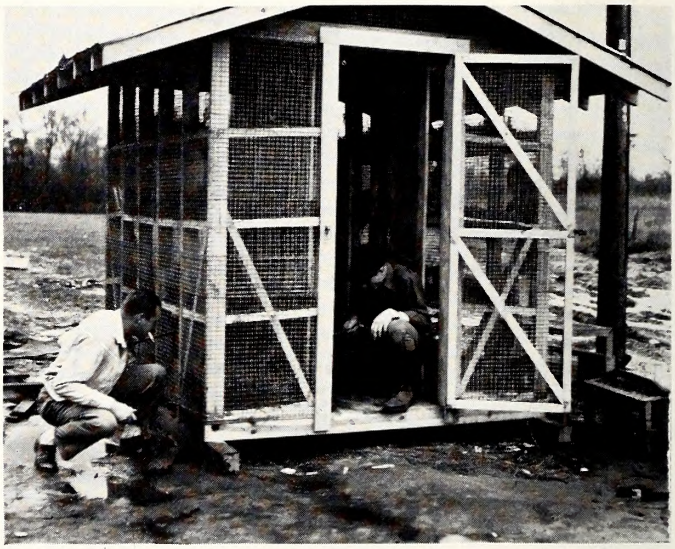
These coons are on their way to new homes in the western part of the state from eastern counties where they have become over-abundant. 100 coons may be carried safely in a pickup truck.

THE Wildlife Resources Commission has just completed its first attempt at a solution to a practical wildlife management problem. In western counties of the state there has been a critical shortage of raccoons in many areas, while in eastern counties low prices for furs have brought about an over-abundance of coons. Coons have become so numerous in some eastern counties that there have been thousands of dollars in damage to crops. The Wildlife Resources Commission believed that here was a problem that could be solved in a manner satisfactory both to those who wanted more coons and those who would be happy to get rid of a large number. The Commission set up a program whereby trappers in eastern counties were encouraged to live-trap coons and transport them to sportsmen and sportsmen's clubs in the western part of the state who wanted more coons.

Although only 507 coons were actually tarnsplanted during the first year, the program was considered highly successful from the point of view of the amount of information which was gained through the first year experiment and which can be turned to advantage during years to come.

To expedite the program, the Commission appointed Bill Kinsey, a member of the Wildlife Patrol, to act as a liaison worker between the trappers and groups desiring to obtain coons. As a result of Kinsey's findings, the program can be speeded next year. The original intention of the program was to obtain live, uninjured coons by using box traps or other devices. It was found, however that these devices did not work and trappers were forced to resort to the use of steel traps.

Here again useful information was obtained. Experienced trappers insisted that coons be trapped in large steel traps such as number one or number two spring-jaw traps. They soon learned, however, that these traps were so powerful that they broke the skin and bones of the animals' feet. The coons then gnawed off their feet and escaped. Kinsey proved to the trappers that the smaller type of steel trap, number 0, was sufficient to hold the coon but would not break the skin. If the animals were attended to at daylight they were almost invariably in the trap and in excellent condition.



Good holding pens are important to keeping coons prior to delivery to their new homes. Although this one is adequate, the individual pens should be larger.

Another problem involved in the trapping of coons was keeping the animals in good condition until they could be delivered to their new homes. The biggest problem here was failure on the part of the trappers to provide adequate holding pens to keep the animal in. Kinsey recommends holding pens large

In a larger holding pen coons may be handled easily without danger of injury. In captivity they eat enormous amounts of food, but do not thrive if held longer than four or five days.

enough so that a man can enter the pen with the coons in order to handle them for shipment. In a large pen, almost any number of coons may be kept safely. Kinsey recommended a simple den device in the form of a barrel which is laid on its side with a burlap bag covering the opening so that the inside of the barrel would be dark. Sawdust or straw makes excellent bedding for the animals and gives them a comfortable place to stay. Good holding pens are a prime necessity for trappers who go into the program with the idea of successfully delivering healthy animals.

Live, healthy, wild coons can put up a terrific fight once their liberty has been interferred with. In order to handle the animals without becoming severely bitten, several devices have been designed. One, and perhaps the best, is the use of a length of light gas pipe with a metal cable drawn through it and the terminal end of the cable fastened to one side of the pipe. This forms a noose to put around the coon's neck. He can then be lifted from the trap to the holding pen and again lifted from the holding pen to the vehicle to be used for transporting the animals. Another good device is a pair of tongs shaped like a blacksmith's tongs. These are designed to close around the animals' neck without danger of choking. Coons have very heavy fur around their necks and heavy neck muscles so that there is little, if any, danger of injuring them with either the noose-like device or the tongs.

Naturally persons obtaining coons for stocking purposes desire them to be in the very best of physical condition. For this reason, coons should not under any circumstances be kept in holding pens longer than one week. During a longer period of time their fur becomes rough and matted. They lose weight and are in such poor physical condition that it is doubtful if they survive when released. If coons are to be kept for several days they must be given plenty of water. It is advisable to place water in a dish that the animals cannot pick up and upset. They will eat food in captivity and may be fed on ordinary dry field corn or a combination of field corn and some type of meat. Where holding pens are near fish markets, fresh fish heads and entrials can be obtained. A pen full of coons will eat a bucket of this material in a single night

Transportation of coons is another problem which has been worked out satisfactorily. It was originally intended that the coons be transported either by truck or common carrier such as express. It was found early in the program, however, that very often coons which were shipped arrived stone dead. This meant a loss to the trapper of his time and a loss to the receiver of the coon for the shipment charges. The most satisfactory way of transporting coons—and as many as one hundred may be moved at a time—is an ordinary pickup truck which has been covered over at the top of the truck bed with an arrangement of boards so that the bed of the truck forms a box. This should be tight enough to let very little, if any light in. The animals seem to be more at ease if they are transported in the dark. They should be given a bed of sawdust or straw to provide footing. A further advantage of direct shipment by pickup truck is that the purchaser of the coons gets an opportunity to examine each of them to make sure that the animals he is paying for are in a live and healthy condition. It takes a day at most to transport them from the holding pens to the point of release and this assures better animals for release in the wild. Once the coons have been transported from the holding pens to their new homes, they should be released as quickly as possible. The man-

Wild coons object to being handled, although holding devices such as shown here in no way hurts them. A covered pickup truck makes the best transport device.

Although this coon was caught in a steel trap, its feet are uninjured. A No. "0" trap was found best for catching coons; injuries were rare.

ner of release is perhaps the most important part of the program. There should be advance preparation for the new arrivals. Den trees should be located so that animals can be turned loose in a den tree in order that they may find shelter immediately. If natural homes are not available, any reliable type of coon den boxes may be constructed and placed where the animals can find shelter. It is advisable to place plenty of food in the vicinity of the coon's new home. Here again field corn serves very well, but any other item of coon diet—and coons will eat almost anything—should be placed near the den tree, den box, or burrow so that the animals will find it immediately on being released.

If possible the coons should be released at night. They are nocturnal animals and feel much more at home during the hours of darkness than if turned loose in broad daylight.

It was surprising to learn that novice trappers were more successful in obtaining coons than experienced coon trappers. The latter, of course, are used to trapping coons for their pelts and do not, therefore, give a great deal of attention to whether the animals are severely injured. It should be stressed that the very smallest type of trap is the most successful, although these light traps do result in many coons escaping. Those that are kept in the trap are always found to be in excellent condition with very little, if any, injuries at all. Trappers should never set traps where coons might fall into water and drown. The trap should always be set in the evening and they should be looked at before sunrise the next morning. Coons will stay in the trap until the sun comes up but once daylight appears, they will become desperate and bite off their feet in order to escape.

The Commission plans to resume the coon transplanting program as soon as the height of the breeding season is past.

As a result of this program, trappers enrich themselves by five dollars per live, uninjured animal, and sportsmen obtain North Carolina-bred coons at two and one-half dollars each. The Wildlife Commission pays the other half of the cost of handling the coons.

Persons wishing to obtain coons or to trap them may obtain complete details with regard to permits, instructions, and costs by writing to the Game Division, North Carolina Wildlife Resources Commission, Box 2919, Raleigh.

Farmers, who have had damage to their crops by coons in the eastern part of the state should notify the Wildlife Commission of this fact so that an effort can be made to remove surplus coons from the area and transport them to areas where stocking is desired.

Officer Bill Kinsey records weight, sex, and physical condition of a coon about to be delivered to sportsmen.

Correction

In the discussion of the breeding habits of white-tailed deer in the March 1950 issue of WILDLIFE it was stated that male white-tails may stay with a single female throughout the breeding season. This was incorrect. They rarely keep company with a doe longer than three days.—Ed.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

NORTH CAROLINA'S FISH AND GAME PROTECTORS HAVE BEEN INSTRUCTED TO CRACK DOWN ON ANGLERS FISHING WITHOUT PROPER LICENSES. DURING THE PAST FEW YEARS THE MOST FREQUENT VIOLATIONS HAVE CONSISTENTLY INVOLVED FISHING OR HUNTING WITHOUT LICENSES OR WITHOUT PROPER LICENSES. ALL FISHERMEN SHOULD OBTAIN COPIES OF THE CURRENT FISHING REGULATIONS IN ORDER TO OBTAIN COMPLETE INFORMATION WITH REGARD TO LICENSE REQUIREMENTS AND OTHER RULES.

IN ORDER TO INCREASE FACILITIES FOR PRODUCING BASS IN THE STATE'S FISH HATCHERIES, CRAPPIES WILL NO LONGER BE PRODUCED AND STOCKED. IN MOST WATERS WHERE CRAPPIES ARE PRESENT THEY HAVE BECOME OVER-ABUNDANT IN RELATION TO OTHER SPECIES, AND IN MANY CASES HAVE "TAKEN OVER" WATERS. CRAPPIES PROVIDE GOOD FISHING ONLY DURING A FEW WEEKS OUT OF A YEAR, WHILE BASS BITE THROUGHOUT THE YEAR.

BECAUSE "JIGGER FISHING" IS DIFFICULT TO DEFINE AND REGULATIONS AGAINST SUCH FISHING ARE ALMOST IMPOSSIBLE TO ENFORCE, THE WILDLIFE RESOURCES COMMISSION HAS REMOVED THE RESTRICTIONS ON THIS TYPE OF FISHING. JIGGER FISHING INVOLVES THE USE OF A BAIT ON A LINE TWO FEET LONG, OR LESS, ON A POLE IN SUCH A MANNER THAT THE BAIT MAY BE DANGLED OVER OR IN WATERS WHICH MIGHT BE IMPOSSIBLE TO REACH WITH ORDINARY TACKLE.

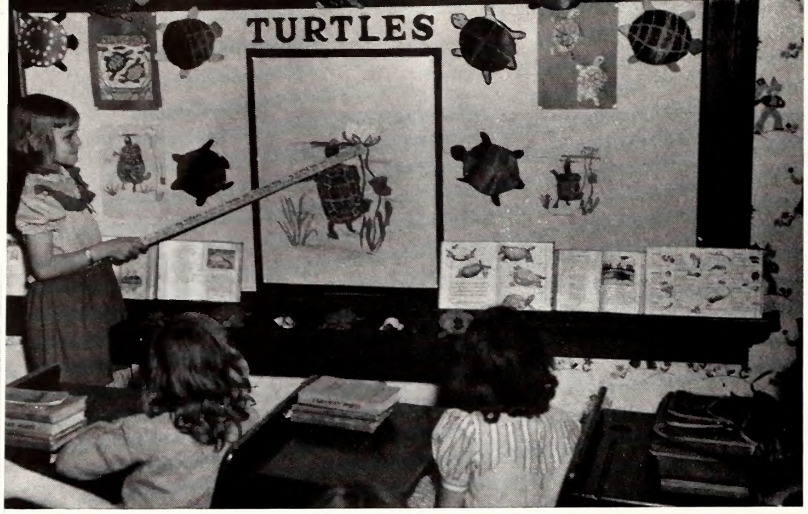
THE CREEL LIMIT ON ROCKFISH IN INLAND WATERS HAS BEEN RAISED FROM EIGHT TO FIFTEEN BY ACTION OF THE N. C. WILDLIFE RESOURCES COMMISSION. TO CLARIFY EXISTING REGULATIONS THE CREEL LIMIT ON ROCKFISH FOR SPORTS FISHERMEN HAS BEEN REMOVED IN COMMERCIAL WATERS.

TO SET TENTATIVE REGULATIONS FOR THE 1950-1951 HUNTING REGULATIONS THE WILDLIFE RESOURCES COMMISSION MEETS ON MAY 8 IN HAYESVILLE, N. C. FOLLOWING THE SETTING OF TENTATIVE REGULATIONS THE COMMISSION WILL HOLD A SERIES OF MEETINGS IN EACH OF THE NINE DISTRICTS TO GIVE SPORTSMEN AN OPPORTUNITY TO EXPRESS THEIR VIEWS WITH REGARD TO THE RULES. ALL HEARINGS WILL BE HELD AT 10:00 A. M. IN COUNTY COURTHOUSES EXCEPT THAT IN ROCKY MOUNT THE CITY COURTROOM WILL BE USED.

FOLLOWING ARE THE DATES AND PLACES OF THE HEARINGS:

MAY 30	DISTRICT 9, SYLVA
MAY 31	DISTRICT 8, MORGANTON
JUNE 1	DISTRICT 7, DOBSON
JUNE 2	DISTRICT 6, ALBEMARLE
JUNE 5	DISTRICT 5, GRAHAM
JUNE 6	DISTRICT 4, ELIZABETHTOWN
JUNE 7	DISTRICT 3, ROCKY MOUNT
JUNE 8	DISTRICT 2, NEW BERN
JUNE 9	DISTRICT 1, EDENTON

THE SERIES OF HEARINGS ARE IN ACCORD WITH THE COMMISSION'S POLICY OF GIVING SPORTSMEN A VOICE IN SETTING EACH YEAR'S REGULATIONS. FOLLOWING THE HEARINGS THE COMMISSION WILL MEET AGAIN TO SET FINAL REGULATIONS.



Carol Tyndall explains the life of the turtle to members of Miss Esther McNeil's third grade in East Lumberton School, Robeson County.

Curtis Elmore, Tommy Little, Barb[illegible] project exhibit in West Lumberton S[illegible]

Karen Peck, Ronald Reese, Marie Rorie, and Douglas Jacobs examine bird houses made as a wildlife project in Ashmont School, Hoke County. R. A. Smook is Principal.

"Our Teachers Mol[illegible]

When they teach conservatio[illegible] Youngsters have a natural intere[illegible] are eager to learn about wildlife [illegible]

Although the Wildlife Resour[illegible] wildlife conservation education t[illegible] there are already over 300 junior [illegible] ly 11,000 pupils.

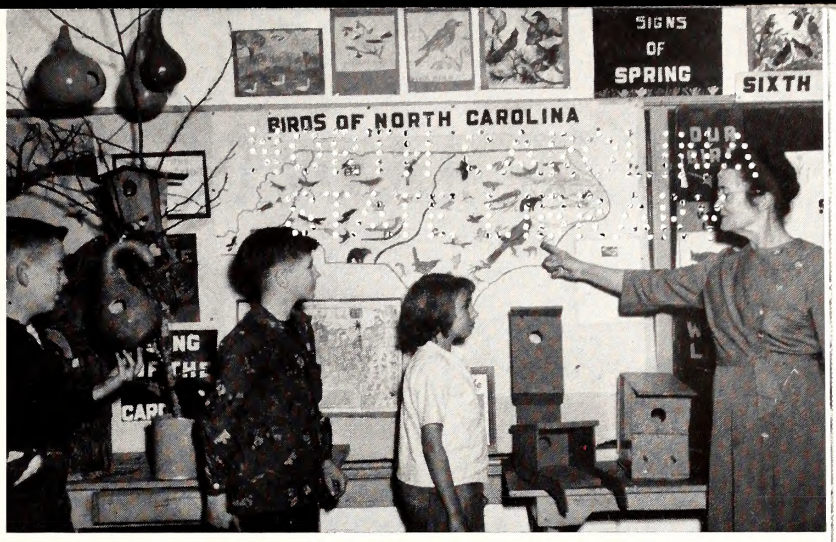
Pupils carry on their own proje[illegible] teachers act as advisers, but let [illegible] Many teachers use the wildlife [illegible] geography, and English. Natural [illegible] studies more interesting to the [illegible]

Miss Lunette Barber, Wildlife E[illegible] mission, directs this work throug[illegible]

Grades 2, 6, and 7 in Smith's School, Robeson County made this wildlife exhibit. Looking at it are Billy Hall, Bunny Perkins, Mary Anne Hardin, and Gary Evers.

A WILDLIFE cover inspired the bea[illegible] Raeford Elementary School, Hoke [illegible] teacher, and Oscar Scull and Delton [illegible]

ud Boyd Farmer enjoy the wildlife
Ethel Ivey is Principal.



Mrs. W. W. Lewis, 6th Grade Teacher in Orrum School, Robeson County, explains wildlife map to Ted Stone, William McCray, and Gladys Lee.

Nation's Future"

ture of the nation is assured.
dlife, and with proper direction,
tion.

mission's program of introducing
is less than a school-year old,
lubs with a membership of near-

extra-curricular activity. Their
gsters solve their own problems.
tudies such as reading, spelling,
in wild creatures makes these

Specialist for the Wildlife Com-
state.

Photos By Margaret Fisler

Wayne Bowen, Jerome Kinlaw, and Jean Freeman, Third Grade pupils in Smith's School, Robeson County, look over a group of bird pictures and bird houses. Their teacher is Miss Ruth Prevatte.

kdrop of the Fifth Grade exhibit in
own here are Mrs. Ruria Shelton,

The Fourth Grade at Garner School in Wake County made a wildlife exhibit in the form of shadow boxes. P. B. Mitchner shows the boxes to Alice Pumphrey. Miss Thelma Jones is their teacher.

EAST LUMBERTON SCHOOL HAS WILDLIFE EXHIBIT

By TOM WICKER, Sports Editor
The Robersonian, Lumberton, N. C.

Youngsters show amazing talent in preparing exhibits such as this one in East Lumberton School.

IT is a question of some proportion as to whether Mrs. George Hargrave (Miss Janie to you) or the entire student body of the East Lumberton grammar school, where she presides as principal, is the more proud these days.

The occasion of all the chest-sticking-out is the Wildlife Exhibit the students have prepared under the direction of Miss Janie and the grade teachers, which was the subject of a Wildlife Magazine photographer Thursday, which is being viewed by prideful parents today (Monday), and which will be entered in the county exhibit, April 13.

Miss Janie, never one to restrain her opinions, is highly vocal about the excellence of the work done by the East Lumberton scholars. "I think it's just grand" was one of her milder compliments.

And well she might think so, for, from the tiny tots of the first grade to the high school minded elders in the eighth grade, the labor on the exhibit has been great, and the results have been—quote "Just grand"—unique. Grand enough, indeed, for Wildlife Magazine to devote their May issue to it, no small honor for the school.

It seems that Mrs. Emily Butler, a county elementary school supervisor, encouraged each school under her jurisdiction to adopt a central project for the year's work. East Lumberton grammar school came up with wildlife, quite a topic to be tackled in its entirety.

The study is more than a general education in wildlife. As Mrs. Butler visualized it, and as it has been worked out, in actuality, the show is a triumph of the development of the students' ingenuity, responsibility, talents, and evaluation, both from an individual and a group viewpoint.

Each student had his part—first to visualize it, then to plan it, then to carry it through to completion. On a larger scale, so did each grade, and in an even larger sense, so did the entire school.

A glance at each grade exemplifies this. Some grades chose birds, the most popular topic. Another chose forestry, while still others tackled rabbits, turtles, frogs, squirrels, mammals, and others of the varied species of wildlife.

The artwork, particularly in drawing and paper cutouts, is surprising in view of the fact that it was done entirely by the students themselves, with only direction and encouragement from the teachers.

A quick rundown of the show:

First grade (Mrs. J. G. Stevens): Birds were selected for study by this group, and the drawings and posters illustrate the viewpoint of the little ones toward their "feathered friends." The drawings are obvious done by first-graders, but then they were meant to be viewed and understood by first-graders. A birdbath with plastic figures, surrounded by greenery, highlights the display.

First grade (Mrs. A. M. Proctor): That old friend of the children, the bunny rabbit, is given a quick once-over in this display, and it concentrates on a theme of the rabbit in well-loved children's fables. Drawings and posters, as well as original verses and stories about the rabbit, accompany published rabbit stories and legends.

First grade (Mrs. Philip McLean) and second grade (Mrs. D. G. McCormick), joint display: Squirrels were chosen by this combined group and a real squirrel, cured and stuffed by the class, highlights the display. The theme of the exhibit is derived from "Chatterer, the Red Squirrel" by Thornton Burgess, and booklets, drawings, exhibits of squirrel foods and habitats compose the show.

Second Grade (Mrs. Ben G. Floyd, Sr.): "Six-Legged Neighbors," insects to you, are subjected to study in this class. One informative part of the display is devoted to helpful and harmful insects, while

poems, drawings, booklets, and other bits of work round out the exhibit.

Third grade (Miss Esther McNeill): One of the best conceived and carried-out projects of the study of turtles. Clay models are used, and paper cutouts of turtles have been made to seem real by the use of spools to make the imitations move like real ones. Drawings, articles, stories are intelligently and cleverly blended into an educational study.

Third grade (Mrs. Carl Pridgen): One of the less lovely, if interesting, species, the toad, has been examined here. The students have constructed a scientific "terrarium" in the classroom, and highlight the show with live toads. In addition, clay models, stories, poems, drawings, and cardboard cutouts are effectively used.

Fourth grade (Mrs. Myron Duncan): The fourth graders have taken mammals as their topic, and their exhibit is led by a "wildlife map" of North Carolina, explaining the habitats of various creatures. Scrapbooks, booklets, and plasters casts are effectively used in the display.

Fourth grade (Mrs. J. D. Collins): This group has localized their study by concentrating on the birds of North Carolina. Color drawings of many of the different species found in the state are present, with two large drawings of the cardinal and of the bluebird cominating the scene. Different types of nests, including a martin's gourd, are also shown. A large mural covers the entire blackboard in the room.

Fifth grade (Miss Mary Moore): Fish came in for the eagle-eye from this group, and in a well-planned display, a good deal of information about the creatures of the deep is put across. An imitation aquarium, ingeniously contrived from green cellophane and electric lights, is the central point of the display, but not the least educational part of it is a study of North Carolina commercial fishing.

Sixth grade (Mrs. S. P. Douglas). The butterfly gets the spotlight in this grade. Posters, booklets, freehand drawings, all show many species of butterfly (each drawing was taken from a real species). In addition, much handicraft (such as handpainting wastebaskets, etc.) has been carried out on a butterfly theme.

Sixth and seventh grades (Miss Dovie Prevatte): Birds are again the subject, this time from the viewpoint of somewhat older children. Posters, drawings, scrapbooks, birdhouses made by the students, paper cutouts, all against a background of pine boughs, make up an attractive and informative scene.

Seventh grade (Hazel C. Powell): Forestry is the subject here, and a good deal of work has obviously gone into the display, which not only shows many of the various types of wood, but also attractively demonstrates many of the uses of each. Unusual items made of wood, such as cloth, paper, plastics, camera film, and phonograph records, are included. A frieze and various posters add to the exhibit.

Eighth grade (Mrs. C. P. Britt): Perhaps the best, certainly the most finished display, is this study of birds. Central feature is a group of 'transparencies' of different types of birds. When a spotlight is lit behind the group, they light up in color. Drawings also show the external structure of birds, birdhouses exemplify the living habits of the creatures, and many posters and booklets impart other information.

It takes a complete tour of the building to take it all in, as the displays are in the different rooms of the school. But when the tour has been completed, an impression of work well done and well worth being done is inescapable.

Although the end of the school year is drawing to a close, plans are already under way for next year's activities. Teachers attending Work Shops this summer will be given instructions in incorporating wildlife training for school work.

WHAT IS THAT ?
THIS MY FRIEND IS A FISH TALE.

FISH FOR *YOUR* NEEDS NOT FOR THE NEIGHBORHOOD

Wildlife Club Activities

IREDELL COUNTY PROJECT

By MARGARET FISLER

Protection of wildlife is the theme of the Iredell County Wildlife Club project.

WHEN the report was received that the Iredell County Wildlife Club membership was "mushrooming," we decided to learn how this was accomplished. With its roll of 650 members, Iredell County Club is vying with Gaston County Club for highest total membership. And to add to its credit, its most ambitious project was only initiated a short five months ago.

In October, when Buford E. Rimmer was installed as president of the club, he, along with the other able officers, decided that to keep the interest in and increase the membership of the club, a worthwhile project must be launched not only to satisfy immediate desires but to provide for the future enjoyment of the club and community.

Among the chief proposals were these things: to build a small lake of from 8 to 10 acres of water, to stock this lake with bream and bass; to provide limited swimming and boating for the youngsters; to include a picnic area with tables, outdoor fireplaces for the family group; to build near the lake a skeet and trap range, also a rifle range for possible turkey shoots; to construct in the near future a clubhouse on the rolling hill just overlooking the lake. These proposals may seem a bit ambitious at first glance, but the remarkable thing is that so much has already been accomplished and everything was started from scratch including choice of site, leasing and purchasing of land for the lake area.

In these few months the lake has been built. It is located three miles east of Statesville, just off the Salisbury Road, and has been stocked with bream, with the bass to be added later. The site for the skeet range has been cleared and most of the electrically-

A dam has created a beautiful pond which will be used for swimming and fishing. Picnic areas will be provided on surrounding land.

A nesting and feeding island was created for waterfowl. Several ducks and geese used the pond this winter. Others will be kept for exhibition purposes.

operated skeet equipment has already been installed. Toward one end of the lake you can see Mallards, Wood Duck, European Calls, and a few Canada Geese that have already stopped by to make themselves a temporary home. Nearby there is a waterfowl island used for nesting and feeding ducks and geese. Even the Wood ducks have been provided with nesting boxes in trees.

In initiating this project, twenty-five members were approached and they readily consented to underwrite the initial expenses to be incurred. From that good start other donations have come in. Some members have contributed their labor and equipment instead of cash. In addition to these devices specific donations of twenty-five dollars were solicited which would apply towards a life membership in the club.

These activities have developed to the extent that they have become a community rather than a club project. For example, the aid of the local garden club has been enlisted to plan the landscaping of the lake site along with the picnic area. The Boy Scouts have helped with building the nesting boxes for the Wood duck. This spirit of cooperation is indicated, too, in the increased farmer membership, who are offered a special membership fee of one rather than two dollars.

As to future plans—well, there are all sorts of things scheduled. Very shortly a representative of Remington Firearms will demonstrate expert skeet shooting as well as the care and safety of firearms. Next a Bait and Flycasting tourney is planned. This accuracy casting contest, popularly called "Skish," is an ideal way to bring in new members to the club and get others, particularly the youngsters, interested in sportsman-like and artistic methods of angling. (Hint to other clubs: further information from National Skish Board, Washington 5, D. C.)

Of course, the immediate benefits to adult and youth are evident in such projects but of more importance is the greater interest in and knowledge of wildlife and its conservation. In other words, as the club's secretary, Mr. F. H. Ewell, says, "No sportsman can afford not to become a member of the Iredell County Wildlife Club."

HAYWOOD COUNTY HUNTING AND FISHING CLUB

By J. M. DEATON

(Photos by the Author)

WITH an active membership of more than 150 sportsmen representing all sections of the county, the Haywood County Hunting and Fishing Club of Canton is making a determined effort to improve hunting and fishing conditions . . . not only in this immediate area but in all sections of Western North Carolina.

Led by Charles A. Smith, Jr., in charge of maintenance equipment for the Canton division of The Champion Paper and Fibre Company, members of the club are cooperating fully in a proposed re-stocking program in this section that should pleasantly astonish the average all-out-doorsman.

President Smith, aided materially by such sportsmen as Gurley G. Robinson, club secretary-treasurer, G. E. Rolland, W. R. Jenkins in addition to Wildlife fish and game protectors assigned to this section of the state, launched a coon re-stocking program which promises to flourish in no uncertain terms. Already the club has purchased and released more than 100 coons furnished by eastern North Carolina trappers and others have been ordered as soon as trappers can "fill the bill."

The quail re-stocking program last spring definite-

A coon purchased for release is provided with a home and plenty of food and water. The club bought 100 from eastern North Carolina to help improve coon hunting.

Some choice rainbow trout ready for stocking in cooperation between the Haywood Club and the Wildlife Resources Commission.

ly paid dividends this fall and winter when the Bob White was found more in abundance than in several years past. This program will be continued, club members say, until Bob White has regained his normal population in this area.

Quail feed and cover has been bought and planted on lands of farmers who were anxious to cooperate with the program. Wildlife game and fish protectors reported little hunting out of season in this section and but few hunters were found afield minus their hunting license.

Coming from the Balsam State Fish Hatchery, near Waynesville, healthy and active brook, rainbow and brown trout have been released in all three prongs of the Pigeon River, in Haywood County, and in the Jonathan Creek section. These waters are said by fish biologists to be ideal for the species stocked therein.

All fish released would average better than nine inches and many would hit the 12 inch mark. They were stocked under the supervision of Charles W. Ormand, Wildlife game and fish protector assigned to Haywood County, and Robert Gillett, assistant superintendent of the Balsam Fish Hatchery.

Haywood County fishermen should experience better angling this spring and summer than has been their pleasure in many moons in the Pigeon River area. The streams are earmarked for another stocking during July.

The Haywood County Hunting and Fishing Club has rearing pools in productive operation which will yield additional hundreds of rainbow and brook trout for Haywood County streams this spring. The club plans to rear double the amount of trout in 1951.

Frank Wade, 9th district Wildlife fish and game supervisor, stationed at Sylva, assured club members recently that the Wildlife Resources Commission stood ready to cooperate with any move taken by sporting clubs to improve hunting and fishing conditions in their respective areas. W. B. Cope, Wildlife protector in Jackson County, lauded the activities of Jackson County Sportsmen, declaring they were making great strides in improving hunting and fishing conditions in their county.

The Canton club plans also to stock this area with a larger breed of cotton tail which can be supplied from a certain area in Georgia. Action on this has already been launched.

Haywood County Fish and Game Protector Charles W. Ormand, right, and Robert Gillett, Assistant Supt. of the Balsam Hatchery, pour rainbows in the Pigeon River.

Appointed by President Smith, the following club members will serve as chairman of various committees during the ensuing year: W. R. Jenkins, coon committee; J. M. Deaton, quail; John Nixon, rabbit; J. Boyd Smathers, fish; Gilbert M. Parris, deer; A. J. Hutchins, bear hunting; R. Ed Davis, fox hunting, and Gladson Haynie, membership committee.

Let's Go Fishing!

National attention will be focused on fishing, May 20 to 27, through sponsorship of "Let's Go Fishing" by The Sporting Goods Dealer, trade journal for the sporting goods industry published in St. Louis, Mo. The Associated Fishing Tackle Manufacturers and the Outboard Club of America are cooperating in the event.

Local fishing tackle dealers will participate with window displays and newspaper advertisements. The promotion is designed to call widespread attention to fishing as a thrilling sport and wholesome recreation.

FISH FOR *YOUR* NEEDS
NOT FOR THE NEIGHBORHOOD

DURHAM COUNTY WILDLIFE CLUB

By RALPH E. DANIEL

A LARGE group of our club members and lively sportsman from the neighboring counties gathered on the farm of Mr. W. Geddie Fields in Chatham County for the renewal of our spring trials.

The grounds was a keystone in the success of this trial along with a bright sunny day. The course was beautiful within itself. It was bordered on three sides with trees and sloping to the center which afforded a small stream. The gallery was treated with a ridge overlooking the course and the bird field.

The judges, Mr. M. E. Parham and Mr. Rell Goldston, were from the Granville County Club. They did a splendid job in choosing the top dogs from a field of thirty-starters in the two stakes. Their choice was received favorably by all those present.

You fellows that stand firmly behind the setter can look over the winners and get some meat for your arguments. From a field of pointers and setters only one pointer could break the win column.

Puppy Stake

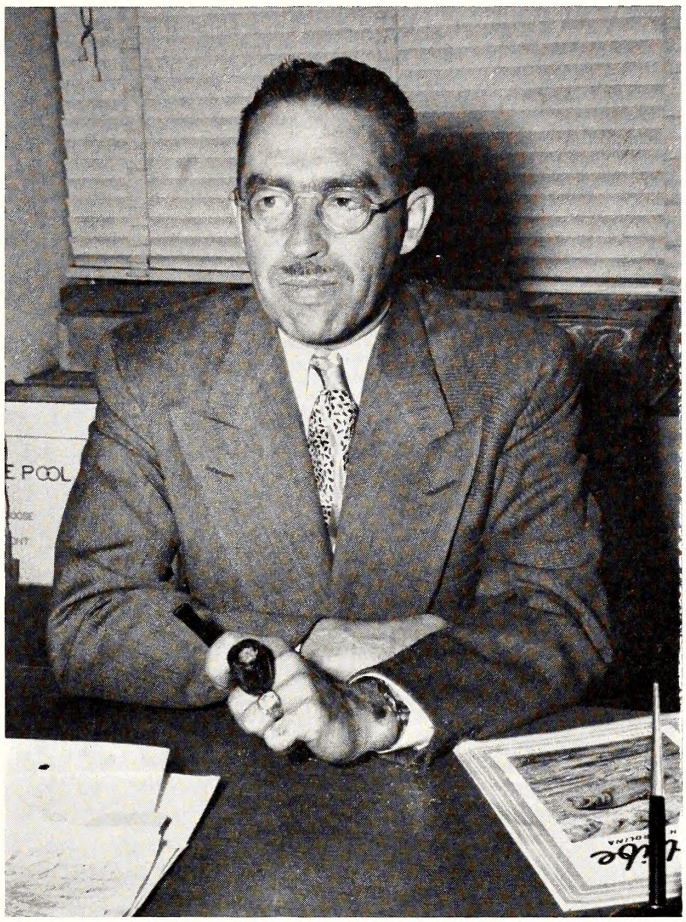
This stake was the most outstanding from the standpoint of speed and range. The boys in the All Age Stake that carried off the mantel decoration in this trial will have to saddle a faster horse when the time for our fall trials rolls around. When the dust had settled from the course Glenn Bunting's little black and white setter named "Lady" had her name on the top line. Following close behind in second place was Fred Aiken's big tricolored setter "Mike."

All Age Stake

This stake was a free for all. The entries ambition to hunt and cover the ground laid out for them in their thirty minute heats was viewed without question. The bird work was not too outstanding due to our own error for having caged birds. First place went to a little black and white setter bitch. She seems to have a firm grip on this position being the same little "Lady" that won the fall trails. She flies the colors of Cecil Thompson. Second place winner was not at all lost just because she was the only pointer to break the win column. "Queenie" goes merrily about her work and answers to the whistle of Tommie Stokes. "Pat," a setter bitch owned by Blair Flinton was at third threatening to better her position on any error by the two dogs placed ahead of her.

Giraffes are the only land mammals believed to be entirely without some type of voice. Aquatic mammals such as whales and porpoise do not have voices.

NEW FISH DIVISION CHIEF APPOINTED



J. Harry Cornell, Chief of the N. C. Wildlife Resources Commission's Fish Division.

To fill the important position as Chief of its Fish Division, the Wildlife Resources Commission chose J. Harry Cornell because of his training and experience in fisheries work.

Cornell came to North Carolina from Virginia where he had been an instructor in fisheries management at Virginia Polytechnic Institute. A native of Pennsylvania, Cornell received a B.S. Degree in Education at Penn State in 1930, and later taught science at the Chester, Pa. high school. He served in the United States Army from March 1942 to August 1945, and now holds a commission as a captain, retired.

He has obtained valuable experience working on lake management with TVA's Dr. Eschmeyer, working on farm ponds with the U. S. Soil Conservation Service, and fish hatchery management with the U. S. Fish and Wildlife Service.

His interest in wildlife club work is reflected in the fact that he is a past state secretary of the Izaak Walton League, Virginia Chapter. He has almost completed work for a Phd. degree, and is currently attending night school at N. C. State College in preparation for receiving the degree.

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

It would seem that this portion of the page has become devoted to a continuous flow of pleas and requests. I might add that the returns in the past have been very feeble. In order to provide a change of pace, let's get something off my chest.

There are at least two activities sanctioned by Commision regulations which are designed to put more game in the field. These are the quail and raccoon trapping and transplanting programs. In the first permission is granted to trap quail within city limits so that they may be transplanted to suitable areas. In the second, raccoons are trapped in areas where there is an over-supply and are then shipped to clubs in areas where there are shortages. The clubs pay a nominal fee for the animals and the Commission makes up the balance to the trappers. These activities are conducted under Commission permit only.

In addition to these activities, many groups of sportsmen and individuals will buy game birds and animals for release and it is well that such interest is alive, but—we have talked with so many people who have participated in this activity and they nearly all tell us that no effort is made to mark the birds or animals they release for future identification! For instance, one club paid a high price for some animals which were shipped from another state—a state of much different habitat and climate. The animals were released without a mark on them, in areas which had been carefully prepared to receive them. Dens were placed everywhere and sources of food had been provided in abundance, and it was known that there was a small supply of native animals living in the area. After a few years, the population had increased favorably and credit for the success was given to the transplanting project—and that is the point of question. *Was* the increase in animals due to the increase in food and habitat? Or, had the foreigners adapted themselves to the new environment and multiplied? Who can tell when there is no method of identifying the animals? Was the expense justified?

Movie photographers film cooperative activity of Johnston County Wildlife Club in planting quail cover.

Let us make this suggestion. No matter what sort of game you are transplanting, mark it in some way —if it is quail, place a band on the leg or clip the hind toe—if rabbits, raccoons or squirrels, tag or notch the ear. In this way you can follow up on your efforts and have some indication of success.

Dr. H. W. S. of Wilson, N. C., writes, "I have read your question and answer page in the Wildlife Magazine and enjoyed it. Please tell me where I can get a river and creek map of Pamlico River, particularly from Washington on east to the inland waterway . . ."

We have made an effort to get this information and find that there is a U. S. Coast and Geodetic Survey navigation chart for the Pamlico River which will show the shore line and the mouths of the tributaries. These charts are excellently detailed and may be obtained from the Henry Eagleton Company, 224 East Plume Street, Norfolk, Virginia. The smaller topographical maps for this area are unavailable as this is one of the several portions of the state not as yet covered by the U. S. Geological Survey activities.

Mr. A. C. of Lumberton, N. C., asks, "Is there any law prohibiting the carrying of a .22 rifle in a boat during fishing season or the summer months? I would appreciate this information as there seems to be quite a difference of opinion among the fishermen of this community."

There is no law prohibiting the presence of firearms in a boat either in or out of season. However, it is only fair to call attention to North Carolina

Farmers and members of Johnston County Club get instructions on planting lespedeza and multiflora rose for quail cover in a cooperative project near Smithfield.

General Statutes, Section 113-104, which says " . . . nor shall birds or animals be taken at any time from an airplane, power boat, sailboat, or any boat under sail, or any floating device towed by a power boat or sailboat . . ." In view of this condition, we advise that the gun when so carried should not be used to kill or attempt to kill any bird or animal in violation of any other laws or regulations.

Dr. W. T. H. of Melvin Hill, N. C., asks, "I wish to know if the wild ducks that use the ponds in this section of Polk County eat fish to any appreciable extent. I built a two acre pond last summer. We put bluegills in about the first of November and plan to put bass in this spring. As quite a few ducks have been using it lately, I have been enjoying their visits very much and would like to have them if they do no harm."

There is a very small possibility that wild ducks could do an appreciable amount of harm in this case. In the first place, fish are not a major item of diet of most of the ducks except the mergansers. Secondly, the birds seldom stay on a pond long enough to do much damage as their presence is probably a rest stop during migration. Finally, the ability of a very few spawning fish to produce an adequate supply almost precludes the possibility of serious damage by ducks.

Mrs. G. H. O. of Elizabeth City, N. C., asks, ". . . Do crickets damage clothes?"

Normally, the food habits of crickets do not include the materials from which clothes are made. However, when the insects are in the house in cold weather, these habits may change and even then it is claimed by some that their damage to fabrics is incidental to their attempts to get starch, grease and other substances out of materials which have not been cleaned. Clothes subject to perspiration and uncleaned will attract both crickets and moths.

Mr. R. M. C. of Murphy, N. C., asks, "What is meant by mid-range trajectory? I just don't get it. It seems to me . . ."

The line from your eye to the target is straight and is called the line of sight. This is *not* the path that the bullet travels. As a bullet starts to drop immediately upon leaving the muzzle of the gun, it would, if it started out along the line of sight, fall below the mark. Therefore, the sights are set high enough above the line of sight to permit the bullet to fall during its flight to the target. The mid-range trajectory is the highest point in this arc *above* the line of sight.

FISH FOR *YOUR* NEEDS NOT FOR THE NEIGHBORHOOD

Some Things To Remember When You Go Fishing

1. **Fish for your needs, not for the neighborhood.**

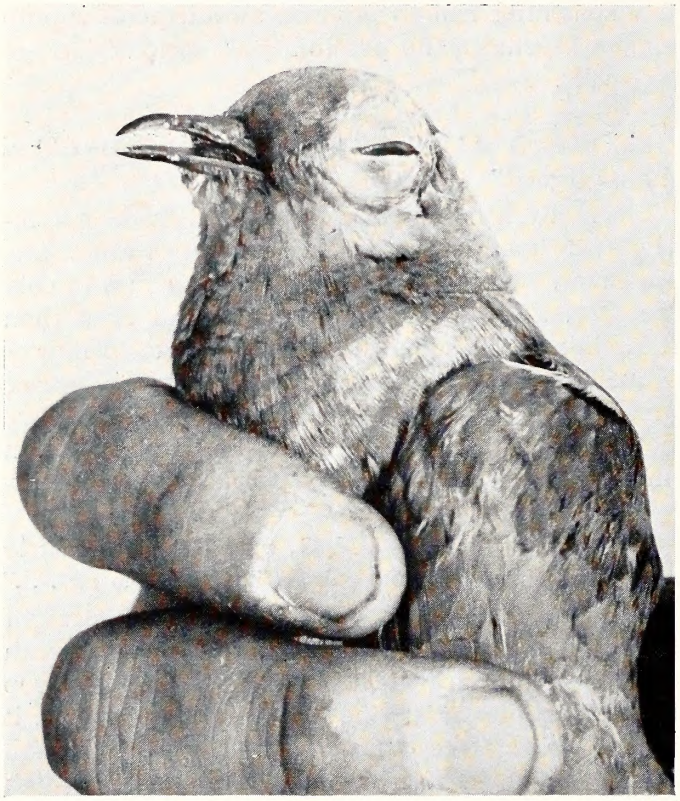
2. **When you go to a private pond or lake, be sure to get the owner's permission. This bit of sportsmanship applies to fishing just as much as it does to hunting.**

3. **Take a youngster along with you; you will get just as much kick out of watching him catch his first fish as he will get from catching it. He will remember you all the rest of his life. Remember the person who took YOU on your first fishing trip?**

4. **Above all, fishing is a sport; play the game according to the rules!** **(—R.A.)**

PROTOZOIC DISEASE IN THE MOURNING DOVE

By NORMAN B. McCULLOCH
Student Assistant, N. C. 30-R*



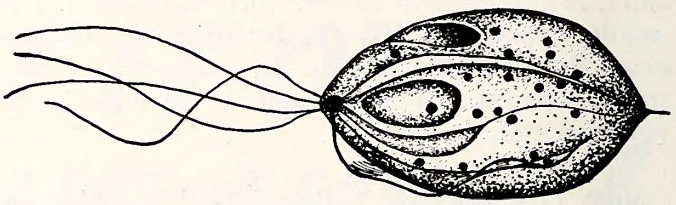
The left eye of this dove shows the effects of Trichomonas infection (Photo by Jack Dermid) (Figure 1.)

A DISEASED adult male mourning dove *(Zenaidura macroura carolinensis)* was picked up on August 19, 1949, in a yard on the Avent Ferry Road one mile south of State College. The bird had a badly infected left eye (Figure 1) and was unable to fly. On further examination it was found to be in a very emaciated condition.

It was thought that the eye might have been injured, but an autopsy by Mr. Frank Craig of the N. C. State College Poultry Disease Laboratory revealed that the dove was infected with a one celled animal flagellate, *Trichomonas gallinae* (Figure 2). The disease, being in an advanced stage, had caused cancerous growths in the crop, esophagus, mouth and sinuses. The affected eye was an after effect of the disease.

This protozoan animal causes cancerous lesions in the upper digestive tract of pigeons, turkeys and chickens. While pigeons are the primary hosts, it is also known to infect wild birds, especially the mourning dove.[1/]

The locality in which the dove was found is frequented by numbers of pigeons, and the disease



The organism which causes the disease is a protozoan parasite. This is an enlargement drawn by Will Hon. (Figure 2.)

very probably stemmed from this source, however, chickens are also raised in the area.

These parasites are transmitted in the droppings or regurgitated material from sick birds and polluted drinking water is an especially good source of infection. Young doves and pigeons can be infected from the "pigeon milk" they are fed at the nest.

While this disease does not appear to be a serious problem in wild birds, it is difficult to evaluate its over-all effect since predatory animals may remove weak and diseased birds before these conditions are noticed.

REFERENCE

1/Biester, H. E. and Schwarte, L. H. 1948. Diseases of Poultry. Iowa State College Press, Ames, Iowa.

The right eye of the same dove appears perfectly normal. Ordinary pigeons are the primary host of the parasite, but it also affects turkeys and chickens. (Photo by Jack Dermid)

*This is a contribution from the Federal Aid to Wildlife Restoration Project 30-R, Mourning Dove Investigation.

(Photo courtesy Illinois Conservation Dept.)

HIGH WATER CASUALTY

This unusual photograph illustrates the effect springtime floods can have on wildlife. Although the picture was taken in Illinois during a recent flood, it shows dramatically the effect of uncontrolled drainage. Where hilly lands are left bare of vegetation, or where hilly farm lands are not contoured, heavy rains swell small streams into raging torrents. Rich soil washes away. Quail nests are destroyed, as are the nests of rabbits. Although adult game birds and animals may escape, the eggs and young perish in the silty, swirling waters.

Although dams across rivers serve to control floods, they cannot prevent valuable soil from washing away. The conservation of wildlife is inseperable from the conservation of soils, forests, and waters.

SANDHILLS AREA — WILDLIFE PARADISE

56,124 ACRES ARE NOW BEING MANAGED BY THE WILDLIFE RESOURCES COMMISSION FOR GAME, FISH AND TIMBER – A PROJECT TO RESTORE QUAIL ON A LARGE AREA IS NOW UNDER WAY AND WILL CONTINUE FOR SEVERAL YEARS

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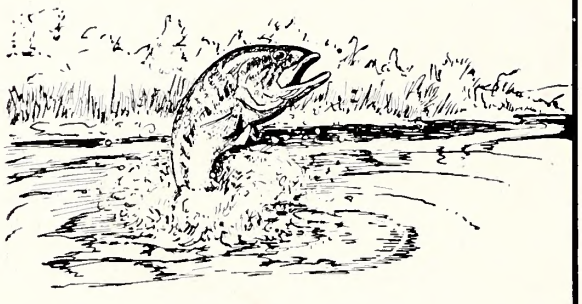

SIX OF THE NINE LAKES WILL BE OPEN TO PUBLIC FOR FISHING THIS YEAR – ALL THE LAKES ARE BEING SCIENTIFICALLY MANAGED TO PROVIDE BETTER FISHING AND TO ATTRACT MIGRATING WATER-FOWL

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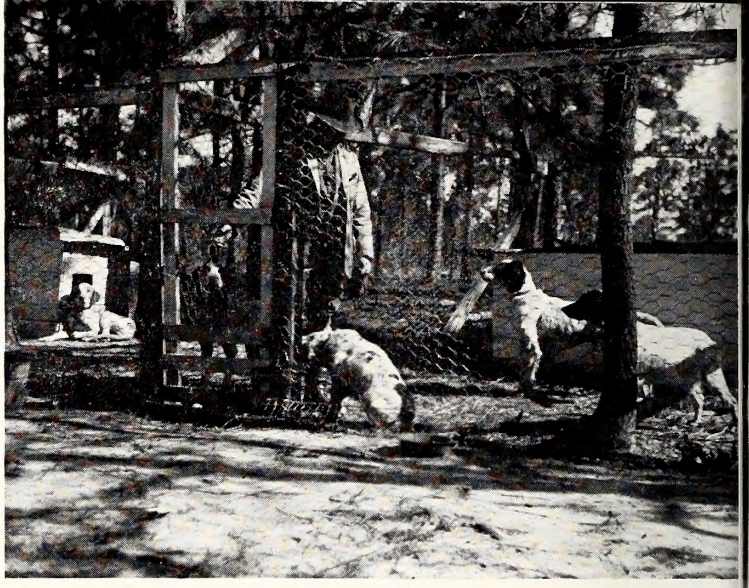

This — **Will Prevent** *This*

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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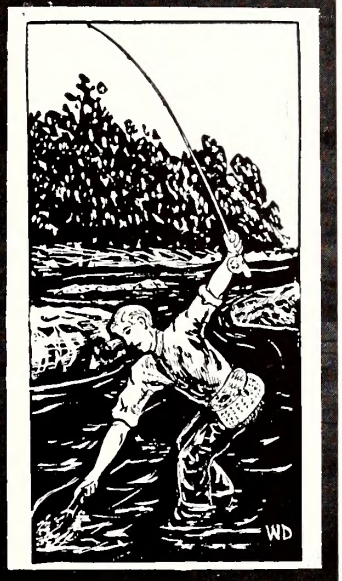

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June 1950 Vol. XIV, No. 6

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
GLORIA MOORE, Circulation

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COVER

June marks the end of the best black bass fishing season, and the spawning season for these magnificent game fish. Win Donat used water colors to depict this largemouth bass in its natural habitat.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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LET'S LEARN ABOUT OUR WILDLIFE

The Seventeenth of a Series on The Wildlife Species of North Carolina

STRIPED and SPOTTED SKUNKS

By ROD AMUNDSON

(Photo Courtesy American Museum of National History, New York)

A striped skunk female with young. The width and length of the white stripes vary with individuals. Some are entirely black.

SKUNKS are among the most famous and notorious animals in the United States. Altogether, there are three genera of skunks in America, the spotted skunk, the hog-nosed skunk, and the common striped skunk. Two of these, the spotted and the striped, occur in North Carolina.

There are two reasons for including skunks in discussions of the important wildlife species of North Carolina. First, they have beautiful and valuable pelts which bring good prices on the fur market. Secondly, they are carnivorous animals, and hence predators.

Because of their highly effective defense mechanism, the scent glands, skunks are known far and wide. The unpleasant smell of the produce of these glands has had an effect on the nomenclature of garments made from their skins. No woman would buy a fur coat labeled "skunk", yet thousands upon thousands of garments have been made and sold under a variety of names coined from the vivid imaginations of style experts. In years past people strongly suspected the origin of the glossy black trim on a coat when faint fumes wafted out on a damp day. Modern processing methods, however, remove entirely the skunk odor from the furs.

Characteristics

Skunks are members of the mink and weasel family. By far their most outstanding characteristic is the terrific odor produced in the scent glands. The glands are located internally just below the juncture of the tail to the body, one on either side of the anal opening. They produce a dark yellow fluid which is reputed to be luminous at night. The secretion is strongly acid, and so tenacious to the atmosphere and any objects that might become contaminated that it may linger for weeks in the vicinity of an expulsion.

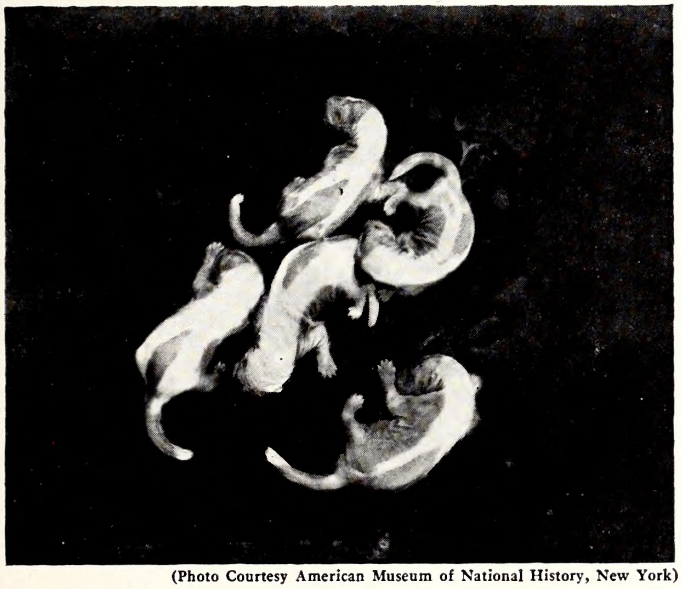
Skunks can and do expel their musk wilfully, but are reluctant to do so except as a last defensive resort. The act of expelling the musk is singular. The animal puts his enemy to the rear, lowers his head to the ground and looks back at the target. This should be sufficient warning to anyone planning to attack the animal. As a further warning, just prior to letting go with a choking spray of fluid, the animal erects its tail and begins a weaving dance with the hind legs, lifting first one and then the other off the ground to produce a swaying of the posterior. After this, any prowler within two or three yards is in danger of being assaulted with a fine spray of fluid which will stop further advance. This may produce temporary or permanent blindness, and result in a violent attack of nausea.

It is often said that skunks cannot expel musk if their tails cannot be held erect, and most authorities consider this to be true. A word of caution may be in order here. In my own experience, I have found it expedient to be sure of the animal's body position before attempting to hold down the tail. My brother and I used to trap skunks for spending money. We had been sent home from school so often for obvious reasons that we were careful about getting scented by trapped animals.

On a particular morning we saw the tail of a skunk protruding from a den on a steep hillside where we had set a trap the night before. We held

a brief consultation, and decided on a plan of action. Being the younger of the two, I was delegated to approach the den from above, grab the animal's tail, hold it down, and drag it from the den so my brother could dispatch it quickly with a club. We discovered too late that the animal was lying on its back. I caught considerable moisture on the side of my face. My glasses saved my eyes, but the odor was so strong that it entirely deadened my sense of smell. I got rather sick and neither of us went to school that day.

Skunks do not exhaust their supply of chemical ammunition at a single expulsion. They are equipped for repeated firing, and can apparently control the amount and intensity of "fire". There is no relation whatever between the expulsion of musk and urination.



(Photo Courtesy American Museum of National History, New York)

Born blind and almost hairless, baby skunks' skins predict the size and shape of their distinctive white stripes.

As though the ability to drive off enemies with chemical warfare were not enough of a distinction, skunks are further distinguished from all other North Carolina mammals by their striking coloration. The over-all color is silky, jet black, with snowy white stripes or spots, depending on the species. The striped skunk has two white stripes which begin at a juncture on the head and continue back to the tail. There are wide variations in this pattern, however. The stripes may be so broad that the entire back appears to be white; or they may be so narrow as to seem altogether absent. In some individuals the stripes progress only to the middle of the back.

The spotted skunk may have a varying number of white markings over the back. It is striped to a degree, but the stripes are interrupted to give a spotted appearance.

Spotted skunks are found only in the mountain counties of North Carolina, while their striped cousins extend their range from the mountains throughout much of the Piedmont section. Rarely have they been found in the coastal plains region.

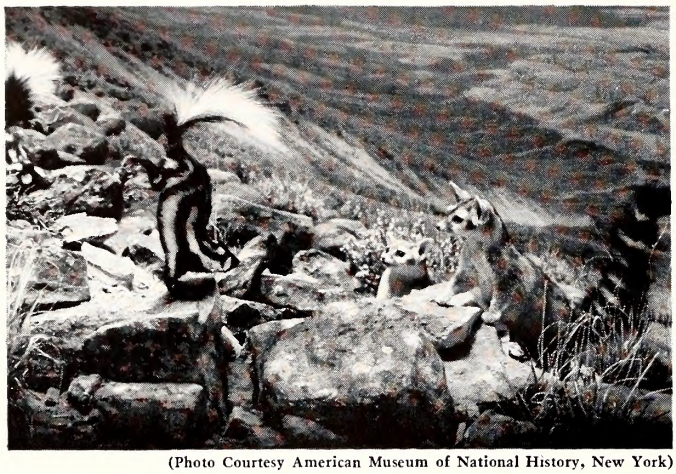
Striped skunks are the larger of the two, with large males measuring up to 24 inches including an eight-inch tail. Maximum weight is about eight pounds, although heavier specimens, taken in the fall accumulation of fat, may be found. The spotted skunk males may reach 20 or 22 inches, and weigh correspondingly less than the striped skunk. In both animals the males are slightly larger than the females. There are no seasonal or sexual differences in coloration.

Absolute statements with regard to the habits of animals are always dangerous if not impossible. For that reason it is impossible to say that skunks are sluggish, independent, and almost fearless because of their wonderfully effective defense mechanism, or that they have been given this defense because of their sluggishness and apparent indifference to enemies. At any rate, they rarely give way to an intruder. They refuse to get out of the way of a car on the highway, and a cautious driver will make every effort to avoid hitting one. Skunk musk seems to have an affinity for automobile tires. Once I had to stop my horse to wait for a mother skunk and five little stinkers to cross a cowpath. The cattle ahead of me took to the brush rather than encounter the animals. Skunks are equipped from birth with musk glands.

Skunk fur is beautiful when processed into garments, and very durable. Expensive "Alaskan

(Photo Courtesy U. S. Fish & Wildlife Service)

The spotted skunk, often called civet cat or pole cat, is actually a smaller cousin of the striped skunk. They are excellent rat killers.



(Photo Courtesy American Museum of National History, New York)

The spotted skunk in defense position. Animals at right are true civet cats, native to some of the southwestern states.

Sable" coats are likely to be nothing more than just plain skunk. Spotted skunks are often called "Civet Cats". For this reason it has been possible to make coats with the beautiful natural white color patterns, and sell them as "Civet" coats.

Breeding Habits

Skunks are relatively prolific. Although there is only one litter of young per year, there may be up to ten youngsters in a single litter. The usual number, however, is five or six. Spotted skunk litters range generally smaller. The gestation period is exactly nine weeks, and the young are born blind, hairless, and for the most part, helpless. Although they are naked at birth, it is possible to predict the color pattern at that time. When the animal will be black, the skin is a dusty blue, and the white areas are pink.

Although skunks are fitted with forefeet adapted to digging, they rarely dig their own dens if an abandoned woodchuck den is available. They may even take over the abandoned living quarters of foxes, or use a small, deep crevice in rocky cliffs.

Skunks may be either monogamous or polygamous, depending, apparently, on the whim of the individual. During the mating period there may be terrific battles among males for the favor of a female. Once the mating is finished, the burden of rearing the young is up to the female parent. This is a task she performs with all of the loving care of a cat with her kittens. The youngsters stay about the den as long as they depend on their mother's milk for food. As soon as they are old enough to eat solids, she takes them out in a group to forage for choice morsels.

Food Habits

It seems that skunks cannot decide whether to be insectivorous or carnivorous. They are very fond of insects and grubs, and will spend hours rooting in the grass and dead leaves for crickets, worms, grubs, grasshoppers, beetles, and bugs. To vary this diet, they may dig out a variety of field mice, invade birds' nests for eggs and young, or worse, seek out a henhouse for nocturnal raids on eggs and small chickens. They will take quail eggs and wild turkey eggs. In this, however, they must compete with crows and bullsnakes, and their total depredations on waterfowl are probably not as destructive as many believe.

Frogs, lizards, crayfish, and other aquatic animal life are included in the skunk menu. In times of food shortage they will eat carrion and attack small rabbits and squirrels.

The spotted skunk is especially fond of rats and mice. A pair of spotted skunks denning under an outbuilding on a farm is worth more in keeping rats and mice down than the best strain of housecats.

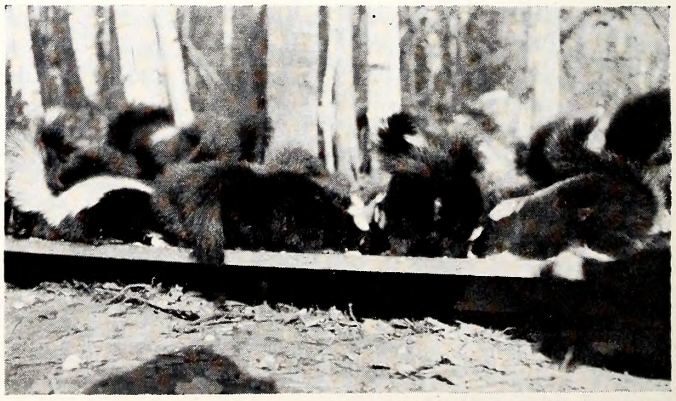
Enemies

For obvious and highly odoriferous reasons, skunks have few enemies. Great horned owls (May, 1950, *Wildlife*) are known to kill and eat skunks. Rarely, when other food is extremely scarce, larger predators such as coyotes and wolves kill an occasional skunk for food.

During outbreaks of rabies, skunks are frequently infected. This is undoubtedly a result of their reliance on their musk glands for protection, and the ease with which a rabid fox or dog can bite them. Rabid animals, in the biting stage, are in a state of complete mental disintegration, and apparently dogs and foxes in this condition take no heed of a blinding spray of stench.

Management

Tolerance, or lack of it, for skunks is a matter of determining whether their value as fur-bearers outweighs the damage they may do to desirable species. The only legal protection given to skunks in North Carolina is a prohibition against poisoning or dynamiting. The animals are in little danger from the latter. Where they invade poultry or game bird farms they must be destroyed. Seldom do they be-



(Photo Courtesy U. S. Fish & Wildlife Service)

Skunks may be raised profitably on game farms. Here is a group at a government experimental farm feeding from a trough.

come especially plentiful, and for that reason, cannot be considered a serious predator.

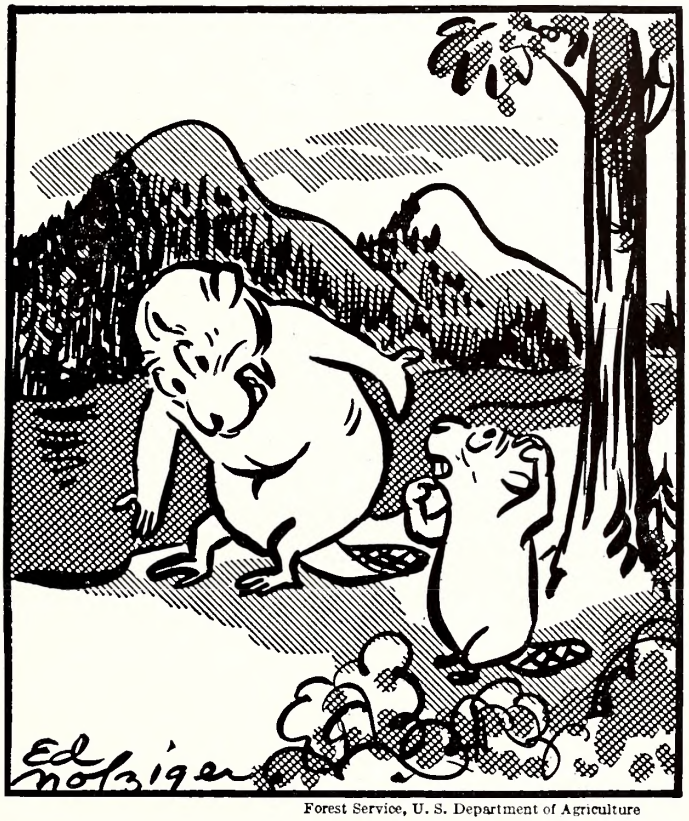
As Pets

Skunks make most interesting and affectionate pets. They can be raised successfully in game farms, but as household pets they excell. A simple bit of surgery by a veterinarian can remove the scent glands of a young animal, and it will grow up to become more affectionate than a cat, and will far outdo a cat as a mouser. Pet skunks are clean in habit. They are extremely playful and learn to come willingly at a call.

(Photo Courtesy Nebraska Game, Forestation and Parks Commission)

Skunks are equipped with curiosity as well as scent glands. This one caught his head in a baked bean jar and was released by the photographer at considerable risk.

"JOE BEAVER" By Ed Nofziger



Forest Service, U. S. Department of Agriculture

"In order to conserve water you must start with soil conservation—Is that so hard to understand?"

STRIPED BASS INVESTIGATION UNDER WAY IN SOUTH

An intensive study to determine whether or not the striped bass in the Santee and Cooper Rivers of South Carolina are part of the main coastal migration that passes northward to Chesapeake Bay each spring now is under way, according to the Wildlife Management Institute.

To date, more than 300 red-and-white button tags have been placed on stripers in the Santee-Cooper drainages. For the return of these numbered tags, together with information on the length and weight of the fish and the place of its capture, a $1 reward is offered. The tag and information must be mailed to the U. S. Fish and Wildlife Service, Washington 25, D. C., and those returning tags will have the satisfaction of knowing that they are contributing materially to the store of facts on the migration and habits of one of the Atlantic Coast's most prized sport fishes. Such data is essential to the improvement and preservation of the unprecedented sports fishery developed in the Santee-Cooper drainages since the construction of that project and to the management of the popular sport fish in other waters. In addition to its general application, the return of tags will determine how many fish go through the locks of the power house of the Santee-Cooper project.

Much more information is needed on environment requirements essential to prolific reproduction of striped bass before it will be possible to develop or restore runs in other waters. The local study is part of a larger, more extensive cooperative project being conducted in Atlantic coastal streams by the various state conservation agencies, the Atlantic States Marine Fisheries Commission, "The Salt Water Sportsman," and the U. S. Fish and Wildlife Service. Work in South Carolina has been made possible through cooperation of A. A. Richardson, chief game warden, South Carolina Department of Fish and Game; R. M. Jeffries, general manager of the South Carolina Public Service authority; and James Silver, regional director, U. S. Fish and Wildlife Service. The project has been coordinated by Clinton E. Atkinson, chief of the Middle Atlantic Fisheries Investigations, U. S. Fish and Wildlife Service; and John H. Sutherlin, refuge manager, Santee National Wildlife Refuge.

The starting lineup.

TAR HEEL COON CLUB FIELD TRIALS

To settle arguments as to who has the best coon dog.

Next to actual coon hunting, coon dog trials are about as exciting an event as any spectator of outdoor sport would care to see. It is exciting enough to watch a flock of greyhounds chase a synthetic rabbit around a race track, but when a pack of ten blueblooded coon hounds take off across the woods in pursuit of a live coon, anything can happen, and often does. You can expect a dog-fight as a side diversion, and at the very least, a good clean race with plenty of bawling and baying thrown in for sound effects.

In April, 1948, a group of nine sportsmen in High Point decided that they owned some pretty good coon hounds, and that there ought to be some way of finding out whose coon howler was the best. Those nine men formed the nucleus of what is now a 225-man organization known as the Tar Heel Coon Club Incorporated of High Point and Thomasville.

On April 10, Easter Monday, the members of the club and what seemed like half of the population of High Point, Thomasville, and surrounding towns got together to run off over 200 dogs in heats of ten each. The dogs ran on a horseshoe course about a mile long, over which had been dragged a perforated capsule containing a concentrated essence of coon scent. The goal for the race was a pair of poles stuck in the ground marking the end of the chase, and a lone poplar tree with a live, wild, bored coon perched in the top.

To start things off for each heat, handlers took their dogs to the starting line where they were allowed to sniff around among liberal sprinklings of coon scent, then brought up to the starting line. At a signal from the starter, the dogs were released and sent off in a flurry of flying feet and deep-voiced baying. For several minutes the dogs could be heard baying in the woods, following the scented trail. Then, in a burst of speed, the hounds broke out of the woods and into a clearing at the finish line. The first dog to come between the two poles was

Coon dog trials are a spectator sport. Here is part of crowd watching Tar Heel Coon Club trials.

As a sporting proposition dogs were "auctioned" to highest bidder. Winning dogs paid their "buyer" a percentage of the total bid on each ten dog heat. Balance went to club treasury.

declared "field" winner. Next came the selection of the "tree" winner. Although many of the dogs spotted the coon and tried to climb up the tree by sheer momentum, they could qualify as winners of the treeing only by sounding off at the coon.

Judges concealed behind camouflaging pine cuttings recorded the number of the first dog to sound off, and declared him tree winner. Sometimes the dogs smelled around the base of the tree several minutes before one sounded off at the coon. Needless to say, those were long moments to the ten owners waiting about in hope that their dog would be first to bay. Further anxiety arose from the fact that there was always the chance that a couple of dogs would start a private feud, and involve the whole pack in a free-for-all dog fight. At any rate, both the dogs and the spectators enjoyed the whole show. And the coon? Apparently it didn't take him long to realize that he was safe. He slept through most of the day, and at night was fed, watered, and turned loose in the woods.

When the members of the Tar Heel Coon Club aren't hunting coons or holding field trials, they concentrate on improving coon hunting in their own locality. In an effort to increase the coon population in the area, the club has bought over 400 coons from Florida to release in the woodlands.

"Florida coons," said Joseph Cavin, High Point, who is president of the club, "just don't seem to be what we want. Most of them come from marsh lands and don't know what to do with themselves in woodland."

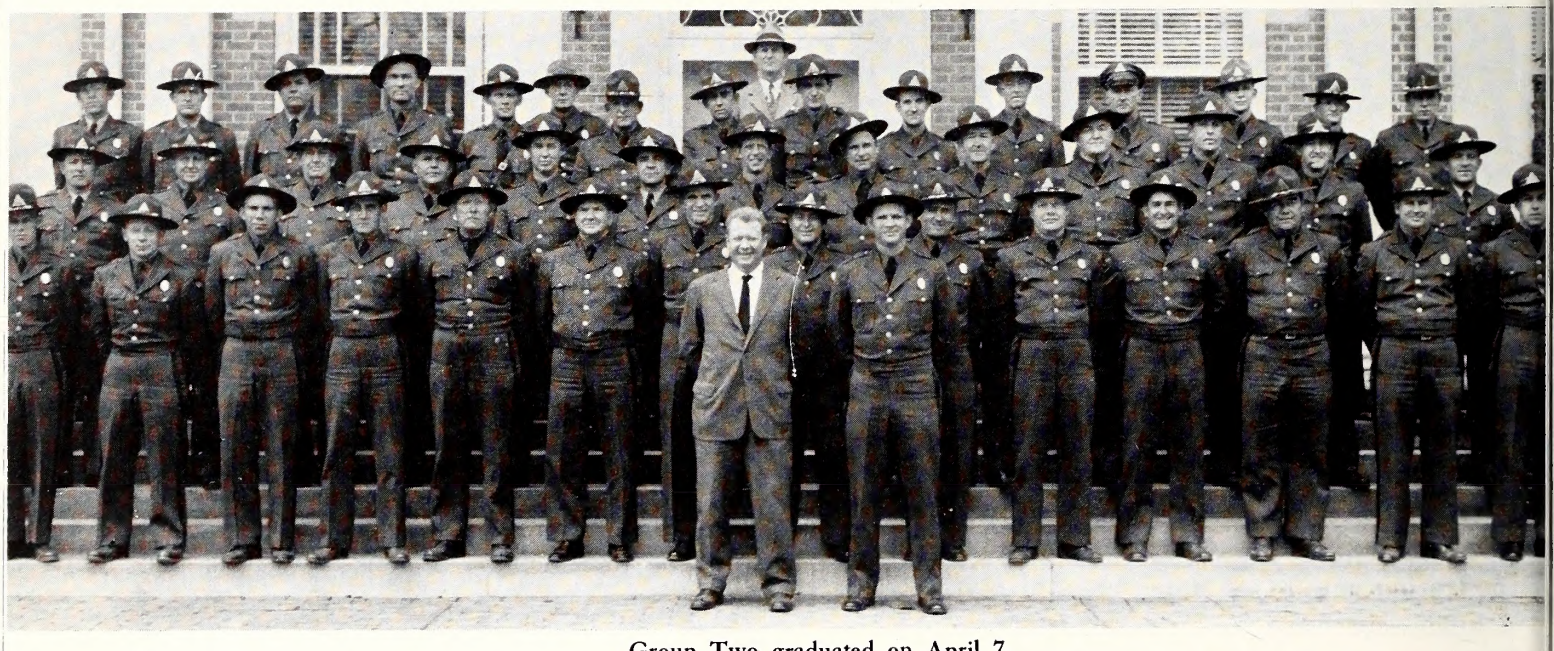
The Tar Heel Coon Club is participating in the Wildlife Resources Commission's coon transplanting program, and this fall expects to get a number of wild North Carolina coons for stocking.

The outstanding thing about coon hunters, particularly those who belong to coon hunting clubs, is the fact that they don't care at all about taking coons. They like to turn their dogs loose and listen to them bay down the trail, and sound off when a coon is treed. That is not hard to understand if you have ever heard the symphony of sound of a pack of coon dogs running down the trail.

One of the coon dogs sounds off to win the "tree" prize. The coon in the tree was released in nearby woods after trials were over.

Plans are already under way for this year's trapping and transplanting of coons. Sportsmen wishing to obtain native coons for stocking should contact the Wildlife Resources Commission.

Group One graduated on March 25.



Group Two graduated on April 7.

Group Three graduated on April 21.

(See page 11 for name

NORTH CAROLINA'S FIRST FISH AND GAME LAW ENFORCEMENT TRAINING SCHOOL

If your local fish and game protector has been going around with a rather studious look about him, it may be the result of some questions he asked last fall.

Back in 1949 all of the State's 125 fish and game protectors were asked to take time out from their law enforcement duties and set down on paper all of the questions they could think of with regard to their work, and send these questions in to the Raleigh office. Nearly 1,500 questions on every conceivable aspect of law enforcement and conservation work came in. These were the first step in bringing about the first training school ever held in North Carolina for fish and game law enforcement personnel.

The 1,500 questions were sorted, screened, and catalogued. Around these queries was built the curriculum for the training school. Here are the general classifications of the questions:

1. Law enforcement problems
2. Interpretation of fish and game laws
3. Powers and duties of the fish and game protector
4. Fish and game management
5. Public relations

The youngest division of the country's oldest State University is the Institute of Government, part of the University of North Carolina, at Chapel Hill. This is the agency that trains all of North Carolina's law enforcement agencies, including the SBI, the Highway Patrol, the ABC law enforcement body, and a variety of public and civic officials who deal with matters pertaining to the law. The law enforcement staff of the Wildlife Resources Commission is the latest addition to the student body of the Institute.

The wildlife law enforcement school was carried on in a series of three two-week sessions, with one-third of the fish and game protectors from throughout the state attending each session. As a matter of security, protectors in adjacent counties took care of the duties of those absent while attending school, and very little publicity was given the school while it was in session.

Altogether, about 25 lecturers and instructors took part in the training curriculum that gave each protector 104 hours of concentrated training. Included were the Institute staff, staff members of the Wildlife Resources Commission, and representatives of the Highway Patrol, the SBI, the Fish and Wildlife Service, the State Health Department, the Forestry Division of the Department of Conservation and Development, and the Wildlife Federation.

Roughly, the school work was divided into three categories: legal training, conservation training, and such miscellaneous subjects as first aid, self defense, and the care and use of weapons.

Legal training involved a history of law, the significance of conservation laws, arrest, search and seizure, jurisdiction, evidence, duties and powers. Considerable attention was given to courtroom procedure, with mock trials serving as demonstration devices. The men were taught the use of modern and scientific crime detection methods, such as fingerprinting and the making of plaster casts of tire tracks and footprints.

The men were briefed on the Wildlife Commission's over-all policy, and the functions of each of the six divisions were outlined by division chiefs and staff members.

Classes in judo taught men new concepts of self defense. To improve their marksmanship, they spent considerable time on the firing range.

Concentrating 104 hours of intensive study into two brief weeks might seem like a hardship to a group of men used to the outdoor life. Classroom seats can become extremely hard and uncomfortable after a few hours. The seats, in fact, were the only complaint the men gave voice to. All in all their morale was admirable. They came to the school willing and eager to learn. All of them contend that they learned a lot.

Group I

1st Row, left to right: W. D. Kinsey, C. M. Pettit, T. L. Faircloth, Walter Bray, E. W. Caine, B. D. Perry, Cleat Poole, Raymond Ramsey, Preston Bagwell, A. D. Neal, George Barr, Joel Bentley, J. W. Camphell, Jr.

2nd Row, left to right: R. K. Harris, Amos Bordeaux, George Hudson, R. F. Logan, A. D. Ward, D. B. Bell, D. E. Barnes, E. L. Mosley, J. L. Myles J. O: Price:

3rd Row, left to right: Frank Wade, H. K. Spain, John Fairchild, Roy Bostic, J. E. Estes, Raymond Watson, D. T. Brian, H. L. Wooten, H. B. Humphrey.

4th Row, left to right: R. H. Hammer, F. T. Parham, B. K. Watts, J. H. Bratten, Cecil Bullock, R. Rhyne, L. E. Pritchard, Tommie Osborne, Cecil Poole, Ben Greene, H. J. Martin.

Group II

1st Row, left to right: Claud Penland, E. M. Cummings, B. L. Boswell, C. R. Parker, H. R. McLean, C. Max Capel, Arnold R. Dalrymple, Bill H. Ipock, T. D. Brummitt, A. E. Jones, L. R. Davis, J. H. King, N. B. Hughes, R. H. Koontz.

2nd Row, left to right: R. A. Dowdy, J. O. Teel, E. W. Woodell, R. E. Evans, Paul Helms, Geo. B. Beamer, D. G. Rivers, Pawnee Duvall, T. W. Gowan, P. B. Wilson, H. A. Robertson, Walter F. Edmisten, Chas. W. Ormand.

3rd Row, left to right: W. M. Carpenter, Woodrow McDonald, Bill Kinsey Oscar T. Taylor, J. H. Vinson, L. E. Warrington, J. T. Terry, Alex S. Davis, M. B. Higgins, Wade Bagwell, W. E. Woody, W. E. McConnaughey, Frank W. Mackie, Admiral G. Howell, Henry Hilliard, Jr., M. J. Daniel.

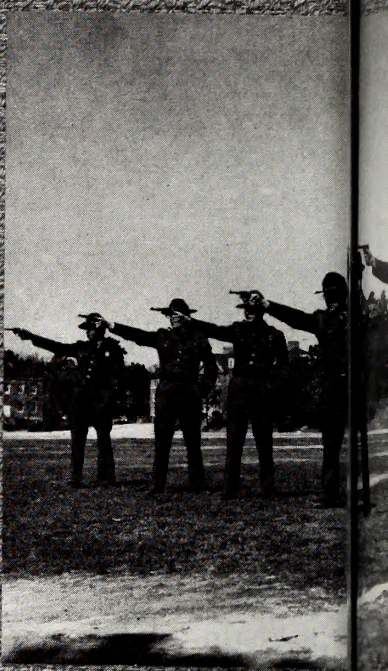
Group III

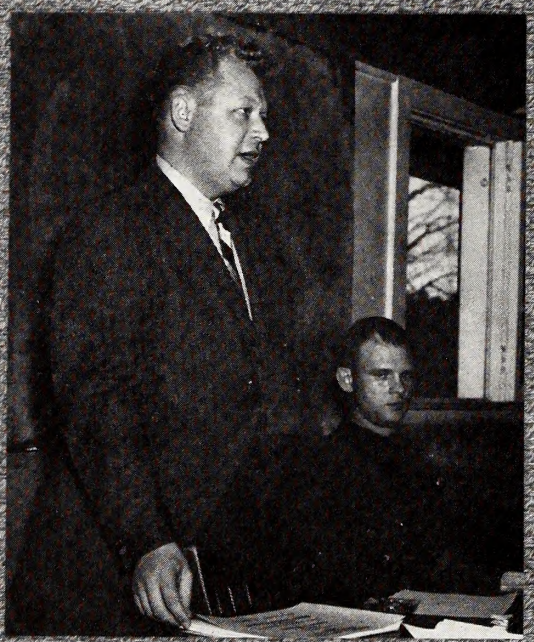
1st Row, left to right: Walter L. Heath, W. B. Cope, Raymond Y. Allen, C. N. Woolard, Clyde McLean, A. D. Pridgen, J. W. Ellis, H. T. Bowmer, C. L. Garland, W. L. Rivenbark, Oscar Chadwick, Sam Culbreth.

2nd Row, left to right: G. Eldon Winslow, H. V. Hines, T. B. Woodruff, Leon K. Thomas, Lester A. Pierce, Jack B. Ballance, John K. Davis, Vernon D. Watts, Jeff Turlington, Tom Rollins, D. C. Hewitt, Ollie Thompson, H. C. Braswell.

3rd Row, left to right: Frank Reese, John Patterson, Wallace W. Jones, Lawrence King, W. L. Smallwood, Lonnie Koonce, Charles Overton, Jr., S. M. Armfield, Elmo L. Walls, Jr., C. B. Spain, Jr., Thomas E. Naylor, Henry B. Williams, Joseph D. Withers.

(Shown in all three pictures are Clifford Pace, Institute of Government, U. N. C., Chapel Hill, and G. A. Jones, Jr., Chief, Law Enforcement Division, N. C. W. R. C.)





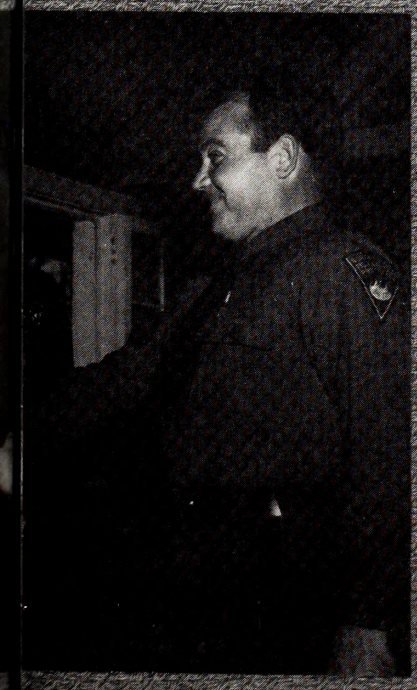
WILDLIFE OFFIC

1. Upper left: Protectors learn to handle rough custon without use of firearms.
2. Left: Clifford Pace, Assistant Director of the Institut Government, lectures to law enforcement students North Carolina wildlife law.
3. Left below: Although classroom chairs became tediou men used to outdoor activity, the students were atten and eager to learn.
4. Below: Graduation day came at the end of a two we period of intensive training. Here a protector receives gratulations and a diploma.

(Photos by M

GS GO TO SCHOOL

5. Above: Here is a group of protectors engaging in target practice with pistols. Sometimes fish and game protectors' lives depend on self defense with a gun.
6. Right above: Courses in judo were spectacular and as is shown in the picture at . . .
7. . . . Right: Were sometimes rough.
8. Right below: The proper care and handling of firearms is as important as knowing how to shoot straight. Most classroom hours, however, were spent in more peaceful pursuits.



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

TAR HEEL ANGLERS AND THE WILDLIFE RESOURCES COMMISSION'S FISH EXPERTS ARE WATCHING WITH INTEREST ANY DEVELOPMENTS WHICH MAY RESULT FROM THE STOCKING OF OVER 4,000,000 WALLEYE FRY IN LAKE CHATUGE, HIGH ROCK LAKE, AND LAKE JAMES. WALLEYES ARE NATIVE ONLY TO STREAMS FLOWING INTO THE MISSISSIPPI BASIN AND ARE NOT COMMON IN NORTH CAROLINA. IF THE EXPERIMENTAL STOCKING OF WALLEYES IN THESE RESERVOIRS IS SUCCESSFUL FURTHER STOCKING WILL BE DONE IN FUTURE YEARS, AND TAR HEEL ANGLERS CAN LOOK FORWARD TO SOME EXCELLENT SPORT.

PUBLIC HEARINGS HELD IN EACH OF THE WILDLIFE RESOURCES COMMISSION'S NINE DISTRICTS WILL HAVE BEEN COMPLETED BY JUNE 9. ON JUNE 14 AT FAYETTEVILLE THE WILDLIFE RESOURCES COMMISSION MEETS TO DETERMINE THE HUNTING REGULATIONS FOR THE COMING SEASON. IT IS ANTICIPATED THAT THE SIMPLIFICATION OF SEASONS AND BAG LIMITS WHICH WAS INSTITUTED DURING THE LAST TWO YEARS WILL BE IN EFFECT AGAIN THIS YEAR.

IN THE TENTATIVE REGULATIONS THE COMMISSION INNOVATED CLOSING THE SEASON ON DEER IN WESTERN COUNTIES DURING THE TIME THE SEASON IS OPEN ON BEAR. THIS MOVE IS DESIGNED TO PREVENT DOGS, WHICH MAY BE USED LEGALLY FOR BEAR HUNTING, FROM JUMPING DEER—THUS GIVING DEER HUNTERS THE ADVANTAGE OF BEAR DOGS. THE PROPOSED RULING IS A CONSERVATION MEASURE DESIGNED TO PREVENT A HEAVY KILL OF DEER.

CLYDE P. PATTON, EXECUTIVE DIRECTOR OF THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, HAS ISSUED A WARNING TO LIVE BAIT FISHERMEN AGAINST USING GAME FISH FOR CUT BAIT. FREQUENTLY FISHERMEN HAVE USED SMALL SUNFISH AND OTHER GAME SPECIES AS A MEANS OF CATCHING OTHER FISH. THIS ACTIVITY IS FORBIDDEN BY NORTH CAROLINA LAW.

AS A FOLLOW-UP OF THE TRAINING SCHOOL FOR WILDLIFE LAW ENFORCEMENT OFFICERS WHICH WAS HELD AT THE INSTITUTE OF GOVERNMENT, UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, THE WILDLIFE COMMISSION PLANS A SERIES OF TWO-DAY REFRESHER COURSES TO BE HELD AT STRATEGIC POINTS THROUGHOUT THE STATE. THE COURSES WILL BE GIVEN DURING THE MONTH OF AUGUST.

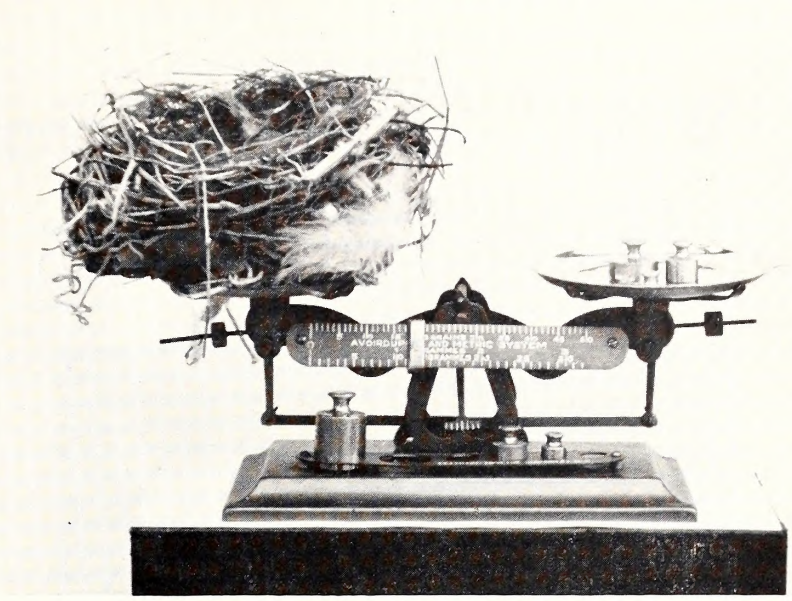
ENTOMOLOGISTS AT N. C. STATE COLLEGE ANTICIPATE ANOTHER SERIOUS OUTBREAK OF SCREW WORMS THIS YEAR IN DOMESTIC LIVESTOCK AND DEER.

LAST YEAR'S OUTBREAK WAS THE MOST SERIOUS ON RECORD, AND TWO SUCCESSIVE MILD WINTERS INDICATE ANOTHER PLAGUE OF SCREW WORMS THIS SUMMER AND EARLY FALL. SCREW WORMS ARE LARVAE OF A GREENISH-BLUE FLY WITH AN ORANGE-RED FACE WHICH LAYS EGGS AROUND THE EDGES OF WOUNDS. THE LARVAE ATTACK LIVE FLESH, AND IN SUFFICIENT NUMBERS CAN CAUSE FATALITY. DEER ARE ESPECIALLY VULNERABLE TO SCREW WORM INFESTATIONS DURING THE MATING SEASON WHEN BUCKS INJURE EACH OTHER WHILE FIGHTING. HUMANS ARE SOMETIMES INFECTED BY SCREW WORMS.

WHAT IS A BIRD'S NEST?

A Natu·e Short

By JACK DERMID



The nest of an Eastern Kingbird.

AT first glance, a bird's nest seems to be a simple affair—nothing more than a cradle to hold the eggs or young. Actually, in most cases, it is an engineering feat, consisting of a wide variety of materials and representing no small amount of work.

If you are skeptical of my statement, try taking the same materials an Eastern Kingbird used in building its nest and from them fashion a nest of your own. Remember it must last for a month or more, be strong enough to allow the parent birds to land on its edge many times a day, and withstand the activities of a growing set of youngsters. The nest must remain secure both in the face of a high wind and under the beating of a driving spring rain. Think your nest will qualify? I will wager it will not last a single day.

In case you want to compare your engineering skill with that of a bird, I can give you the specifications of a successful kingbird's nest. The nest of this species is neither elaborate nor simple. It is just an average bird's nest. The particular kingbird's nest that I analyzed was built in a white oak near the center of a pasture. It was placed about eleven feet from the ground and nearly as far from the trunk of the tree. But since the limb at the spot was only an inch in diameter and a bit shaky, I would advise you to begin your first nest with both feet on the ground.

The accompanying photograph shows the general shape of the nest. It was nearly round, being 5½ inches in diameter and 2⅜ inches high over-all. The inside bowl was 3 inches across and 1½ inches deep. The empty nest weighed 33.1 grams or a little more than an ounce.

An ounce of nesting material seems small, but the kingbird worked long and hard to gather it—a piece or two at a time. There is no way of telling how many beaksful of cattle hair went into the lining of the nest, which was three-eighths of an inch thick and composed of hairs that averaged two inches long. That is a lot of hair. Maybe the kingbird tired of gathering it, however, for a small portion of the lining was made up of a piece of flattened cotton, so well interwoven with the hair that to remove it would destroy the entire nest lining. It was the job of a master weaver.

The bulk of the nest was fashioned from 119 pieces of rootlets and small stems. These ranged in length from 2 to 20 inches, averaging 5, and so placed to give the structure strength. The Kingbird did not forget the decorations, either, using 11 feathers, 2 leaves, 3 pieces of blue wool yarn, 4 narrow strips of white cloth, several small pieces of cotton, 3 strips of wire insulation, and 28 pieces of string, totaling 483 inches.

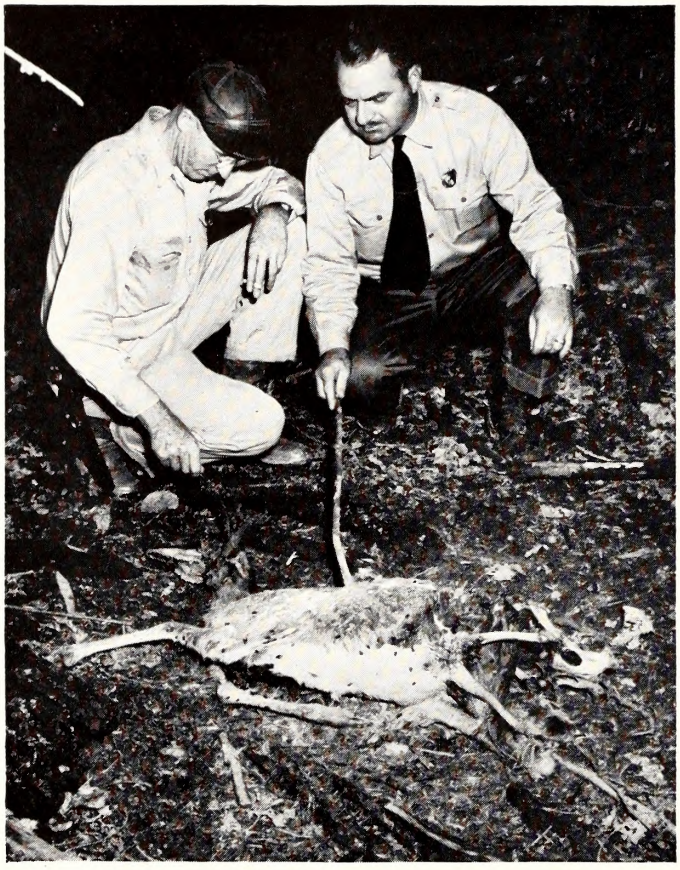
(Photo by Margaret Fisler)

What is it? Most people guess "a white rat." Actually it is an albino 'possum.

WHAT IS "Black Tongue" AMONG DEER?

By FRED J. RUFF*

Photos by Margaret Fisler



This scene is typical of many throughout North Carolina last fall during the outbreak of a disease among deer.

IN August 1939 a disease spread among the deer of the Pisgah National Game Preserve in western North Carolina. By the time the epizootic subsided in the last week of October, it was estimated that about 1000 deer had died. The disease had struck suddenly, spread rapidly and subsided, apparently when cold weather occurred. Old local residents called it "black-tongue," presumably because one of the post-mortem characteristics of an animal was a discolored and swollen tongue which generally protruded from the mouth.

The term "black-tongue" is a colloquialism that has been applied in the South to epizootics among the white-tailed deer. Rumors of black-tongue outbreaks are prevalent among local people wherever a deer herd exists or had existed. In all places, the general descriptions of the circumstances are similar. It is probable that most epizootics have been caused by the same disease.

*In Charge of Wildlife and Range Management
U. S. Forest Service
Region 8, Atlanta, Georgia

Evidence of unusually heavy losses among deer in the South has been accumulated in U. S. Forest Service files for about 40 years. Early records are sketchy and rare, but 40 years ago deer also were relatively rare. The first record of heavy deer losses is from the Pisgah National Game Preserve, North Carolina. It is a reference by C. G. Smith to the excessive mortality among deer on the Preserve sometime between 1908 and 1912, as reported by Supervisor Verne Rhoads. The ailment was allegedly referred to as black-tongue, and it was the opinion of some that it might have been foot-and-mouth disease. No detailed investigation had been successfully made, however.

The next available record refers to unusual deer losses which occurred on Cherokee Game Refuge No. 1, about 18 miles south of Etowah, Tennessee, which is now part of the Ocoee Wildlife Management Area. The losses were first reported on October 8, 1932. Up to that date, 20 deer carcasses had actually been found. The report stated that local residents identified the disease "black-tongue" and had informed the investigator that this ailment killed off practically all the deer in the section once before. Opinions as to identification of the disease included mycotic stomatitis, hoof-and-mouth disease, blackleg, and hemorrhagic septicemia. The last two diseases were apparently prevalent among livestock. A sidelight in the final report by C. G. Smith idicated the identified presence of hemorrhagic septicemia among the deer of the Wichita National Game Refuge in eastern Oklahoma a number of years previously.

A report dated July 26, 1933, stated that virtually no deer existed at that date on Cherokee Refuge No. 1. The absence of the animals was ascribed to the ravages of disease during the previous year.

The next reports in the files of the Forest Service deal with the outbreak in 1939 of the deer epizootic in western North Carolina. The investigation of this epizootic was relatively detailed and was tied in with certain previous findings on the Pisgah National Game Preserve.

A final analysis of the correspondence and reports indicates that a disease began spreading among the deer of the Preserve during the first week of August 1939. First indications were noticed at the fawn rearing station, where about 200 animals were being hand-raised for restocking purposes. The personnel in charge of rearing diagnosed the disease as hemorrhagic septicemia. They based their diagnosis on

experience during the two previous years, when a few deer died each time from this disease as identified by local veterinarians. During 1938, the spread of the disease had apparently been halted at the rearing station by inoculating all animals with hemorrhagic septicemia bacterin. Such bacterin inoculation had been instituted as a standard treatment for all fawns during 1939. Despite this action, however, losses from what was identified as hemorrhagic septicemia started on August 22. On the same day, losses were discovered among wild animals on the Davidson River watershed. Concurrently, losses were reported from the Wayah Bald Game Refuge in Macon County, North Carolina.

The disease was eventually diagnosed by a number of investigators. Dr. A. A. Hussman of the Bureau of Animal Husbandry diagnosed hemorrhagic septicemia from the carcass of a buck from Macon County. Local veterinarians who had been familiar with previous losses among fawns at the rearing station diagnosed the same diseae. Dr. J. E. Shillinger and Dr. Don R. Coburn of the U. S. Fish and Wildlife Service diagnosed the disease during their several trips to the Pisgah Preserve. Doctors Brown and Blumberg of the Veterans Administration Hospital, Oteen, North Carolina, also diagnosed this disease and eventually succeeded in culturing a bipolar organism which they identified as the causative organism of hemorrhagic septicemia.

It is of interest to note that a series of three separate attempts was made to demonstrate the disease in laboratory animals without success. It is reported that the one attempt was made by a local veterinarian, who used rabbits as test animals. The results were reported to be negative. Dr. Coburn made an attempt at the Patuxent Research laboratories from material he had collected. His results were negative also. The third such test was made by the Veterans Administration laboratory at Oteen. Six guinea pigs and three rabbits were "injected with citrated blood taken from a typical case, but the results failed to show indications of disease."

The epizootic subsided in middle October and apparently was terminated in the last week of the month. It was estimated that 1,000 deer were lost in the wild. Actually, 238 carcasses were found in the wild and 83 fawns perished from the disease at the rearing station. Records for the Wayah Bald Game Refuge are not complete, but 40 carcasses had been found up to September 25.

The next outbreak of "black-tongue" was reported again from East Tennessee. A report dated September 14, 1945, states that 8 deer were found dead on the Ocoee Wildlife Management Area, which apparently had died during the previous week. By September 25 the total had risen to 21, and by October 26, 58 deer had been found on the Ocoee Area and 25 on the Tellico Wildlife Management Area near Tellico Plains, Tennessee. It was also reported that 6 had been found in northern Cooke County and 24 about Norris Dam.

Again it was difficult to identify the disease. A veterinarian in Chattanooga, Tennessee, had diagnosed hemorrhagic septicemia from a fresh carcass recovered in the Norris Dam region. The U. S. Fish and Wildlife Service, Patuxent Research Refuge, studied portions of a carcass from the Ocoee Area. The report stated that "tissue smears showed presence of long Gram-negative rods and bipolar organisms. The latter bacterial forms and hemorrhagic lesions observed in the heart muscle are pathognomonic of hemorrhagic septicemia. Test animals inoculation, including rabbits, rats, and mice, did not result in the development of any infections.

"There is probably little question that the infection in the deer was the so-called hemorrhagic septicemia, but we have been unable to verify it by culture or animal test methods from the tissues supplied."

It was reported in 1948 that several deer were again found on the Ocoee area to have died of hemorrhagic septicemia, but the disease did not appear to be widespread. No other records of abnormally heavy deer losses are available in the Forest Service files between 1945 and this summer. A report was prepared in August 1949 on findings in connection with the known loss of 58 deer on the Choccolocco Wildlife Management Area near Heflin, Alabama. Apparently, the first evidence of unusual mortality among deer was discovered about August 1, 1949. The causes of death were variously ascribed to the current use of the product "ammate" (ammonium sulfamate) in removal of "weed-trees" from timber stands, and to several probable diseases. The writer of the report assured himself that ammate was not

Only when fresh specimens were found could a diagnostic examination be made. This buck was brought to N. C. State College for examination.

responsible because of the widespread occurrence of deaths and because any significant toxins had not been found in examination of a rumen by the state toxicologist.

Concurrent with widespread evidence of mortality on this area, reports of deaths were also received from the Oakmulgee Wildlife Management Area near Centerville, Alabama, and the Black Warrior Wildlife Management Area near Haleyville, Alabama. In addition, it was learned that a number of dead animals found in the southern part of the state had been examined by the School of Veterinary Medicine and the cause of death tentatively ascribed diphtheria.

A sick fawn was made available on August 16, 1949, to the School of Veterinary Medicine, Auburn, Alabama. The autopsy report prepared by Dr. Dean S. Folse read like those prepared during the Pisgah epizootic of 1939. A later report from Dr. Folse stated that the Toxicologist was not able to find any poisonous substance in the fawn. It also stated that "the guinea pigs inoculated with hemorrhagic material showed muscular soreness the following day, but have been normal ever since. Intravenous inoculation of a culture from the deer heart was made into a rabbit, with no ill effects. This was a Gram-negative rod, and we thought it might be a hemorrhagic septicemia organism. The rabbit didn't think so!"

The next report of unusual deer mortality came from the Pisgah National Game Preserve, dated August 31, 1949. By September 7, a total of 14 dead deer had been found, largely confined to the North Mills and Upper Bent Creek Areas. A fresh carcass had been examined by a local veterinarian who had had considerable experience with the 1939 epizootic. He diagnosed hemorrhagic septicemia as the disease.

On September 15, 1949, the date on which this account is being prepared, a verbal report from the Fish and Wildlife Service indicates abnormal mortality in deer of eastern Kentucky.

Certain resemblances exist in all reported epizootics. They are:

1. All epizootics occurred during late summer and early fall, and were terminated at the onset of cold weather.

2. They started at widely separated spots and spread from these foci during a subsequent 8 to 10-week period.

The general characteristics of the epizootics were:

1. The rate of mortality generally increased after a period of cool, rainy weather.

2. Most animals were found near water, indicating an attempt to reach water before death.

3. Illness was generally of short duratioin, apparently not over four days.

4. Areas were deer were well fed and forage was plentiful sustained as many losses as areas where forage was scarce.

5. No relationship has yet been determined between the season's average weather conditions and virulence of the disease. The 1939 epizootic on the Pisgah Preserve occurred after a rather dry spell. That of 1949 on the same area broke out after an especially rainy period.

The observed effects of the disease on the animal are summarized as follows:

1. Animals generally died with fever and intense convulsions. Frequently the head was thrown far back at death. The rectal temperature of one sick fawn was 102.4° F.

2. Many animals apparently went blind shortly before death, and would stagger about in a dazed condition.

3. Hemorrhagic lesions were generally found in all specimens examined. Blood masses under the skin were frequent. Hemorrhaged capillaries, leaving blood spots the size of a pinhead and larger, were noticeable. Mesentery tissue was generally injected.

4. The tongue of most animals was swollen, discolored and injected. At this stage, it generally protruded from the mouth.

5. Eyelids of many animals were red and bloodshot in early stages of the disease, as noted among fawns. Eyes frequently were bloodshot and often exuded blood from behind and around them. Frequently, lacrimation was evident.

6. Blood, serous fluid, or both, were frequently passed from the mouth and nostrils. Coughing was evident in some sick animals.

7. Yellow serous fluid was frequently present in large quantities about the throat, at the base of the ear, in the region of the lower jaw, in the pericardium, or free in the body cavity. Blood was also found free in the body cavity.

8. The spleen was found to be generally normal. Kidneys frequently showed signs of disintegration, the liver was frequently swollen, the brain was generally normal, and the lungs appeared normal except for hemorrhages. Some hemorrhagic lesions have been found in almost all organs, however.

9. An intestinal form of the disease was evident at the Pisgah Fawn Rearing Station in 1937 and 1938. The deaths in 1939 showed completely over-all infection, however.

10. Significantly, a total of 5 separate series of attempts to demonstrate the disease in test animals (all mammals) were reported to be negative.

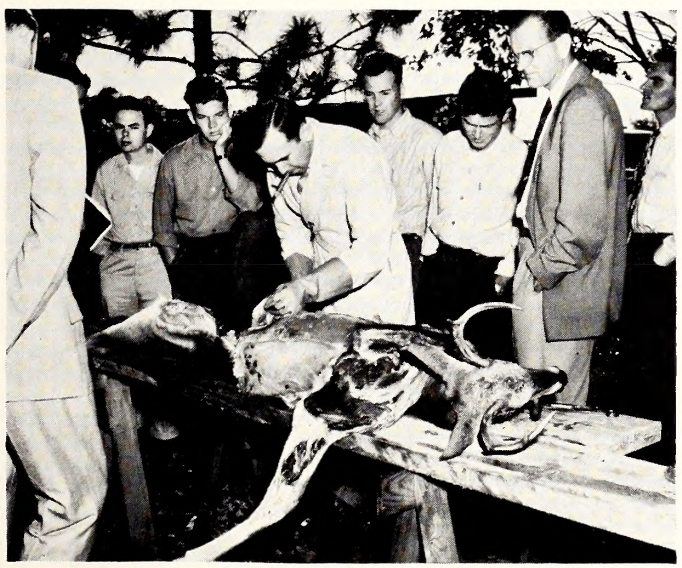
It is evident that a disease of considerable virulence periodically results in an epizootic among the deer in the South, especially in the region of the Appalachians. From the best available information, it is hemorrhagic septicemia caused by a variety of the organism *Pasteurella bipolaris septicus*. So far, remarkably little is known about it. For instance, nothing is known about its transmission among deer, its possible characteristics of becoming patho-

genic under certain conditions, the conditions that may cause this, the concentration of deer per unit area which may be highly susceptible to the disease, and many other questions regarding its effect on future deer management in the South.

One of the important reasons that so little is known of the disease is that it has occurred at unexpected times for a relatively short period, and perhaps in an area not previously infected. Consequently, there has been almost no interchange of observations between investigators and no summation of past positive or negative results.

In view of the nature of the periodic infections, the disease takes on the aspect of an interstate problem. As such, it appears that the most logical method by which to solve this problem is to direct the efforts of each state toward a common goal, to coordinate the work of each with the other and to combine and compile the findings of all under a single project. Such a project may be guided by a committee of game directors, by the Fish and Wildlife Service, or by some other selected central agency.

Whatever the method chosen, however, it appears essential that the existence of the condition be recognized as being widespread in the South. It is therefore most probable that each state and each technician will have the opportunity of contributing to the solution of this much misconstrued problem of "black-tongue" in deer.



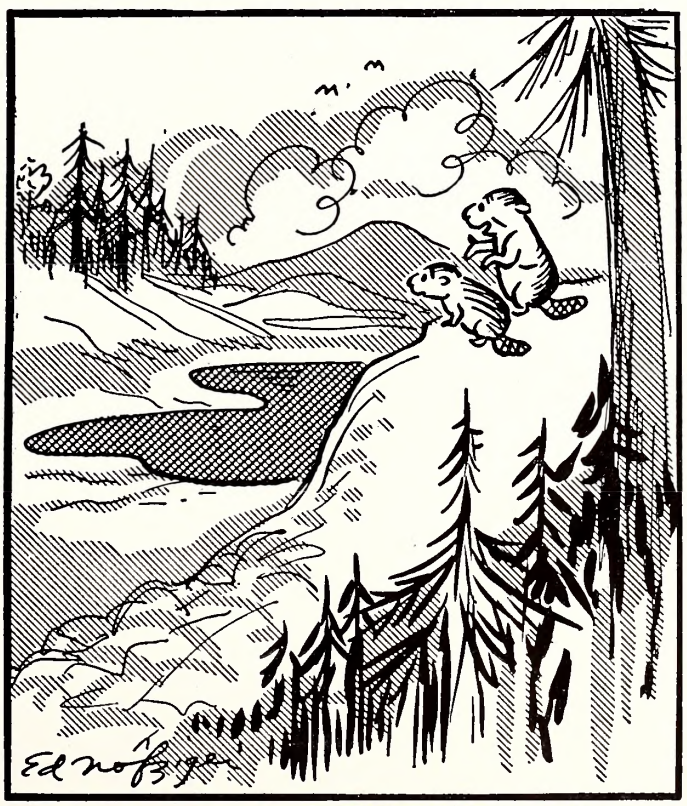
Animal pathologists at N. C. State College examine a fresh specimen of a deer believed to have died from a mysterious deer sickness.

The July 1950 issue of WILDLIFE will run another article on deer disease. Pathologists now believe that the organism which causes the disease among deer has been identified.

(Photo Courtesy Illinois Conservation Commission)

This is not a young mule. It is a white-tailed jack rabbit, a species native to the middle west.

"JOE BEAVER" By Ed Nofziger



Forest Service, U. S. Department of Agriculture

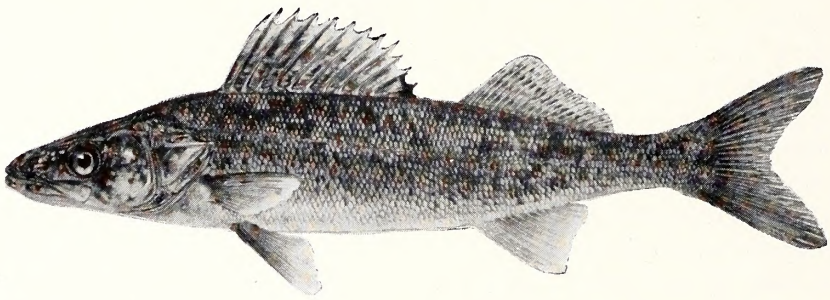
"How can they protect reservoirs from sediment unless they first protect forests and pastures?"

N. C. WALLEYES

The Wildlife Resources Commission has put over 4,000,000 Walleyes in James, Chatuge, and High Rock Reservoirs. Here are the Facts about Walleyes.

By Lou S. Caine

(Photos by Win Donat)



Five million walleye eggs arrive at the Raleigh-Durham Airport as a gift to the sportsmen of North Carolina from the New York Conservation Commission.

IN spring, the fisherman's fancy turns to walleyes, especially those who appreciate excellent eating along with a highly enjoyable sport. While not on the spectacular side, the walleye is a solid denizen of the deep with sufficient attraction to boast a tremendous following among sporting anglers.

Probably because of its numerous needle-like teeth, the walleye is at times erroneously called a pike. This is a definite misnomer for the walleke belongs to the perch family and not the pike. Fortunately, the modern angler is also a willing reader who prefers to use the proper terminology, and each year finds increasing numbers calling this fish by its correct name—walleye.

The walleye is heavily fished for because of its high food value and willingness to strike nearly any lure. However, nature has equipped it to hold its own for the walleye is one of the most prolific spawners of all game fish. Some large females will produce as many as 300,000 eggs, each of which is comparatively small, or about 1/12th inch in diameter.

Especially in lakes, walleyes are schooling fish and once they are located, fine sport and finer eating are the rewards of a successful search.

NAMES

The walleye is blessed — or cursed — with an abundance of aliases, most of them colorfully descriptive. In Canada, especially the French-tinted areas, it is called dore—meaning "golden fish." In this country, most of its names inaccurately connect the walleye with the pike family, while some align it with the salmon group. The most common are: blue pike, dory, glasseye, marble-eye, gray pike, green pike, yellow pike, jack, jackfish, jack salmon, sauger, susquehanna salmon, walleye perch, walleye pickerel, walleye pike, white-eye, yellow pickerel and yellow pike perch.

CHARACTERISTICS

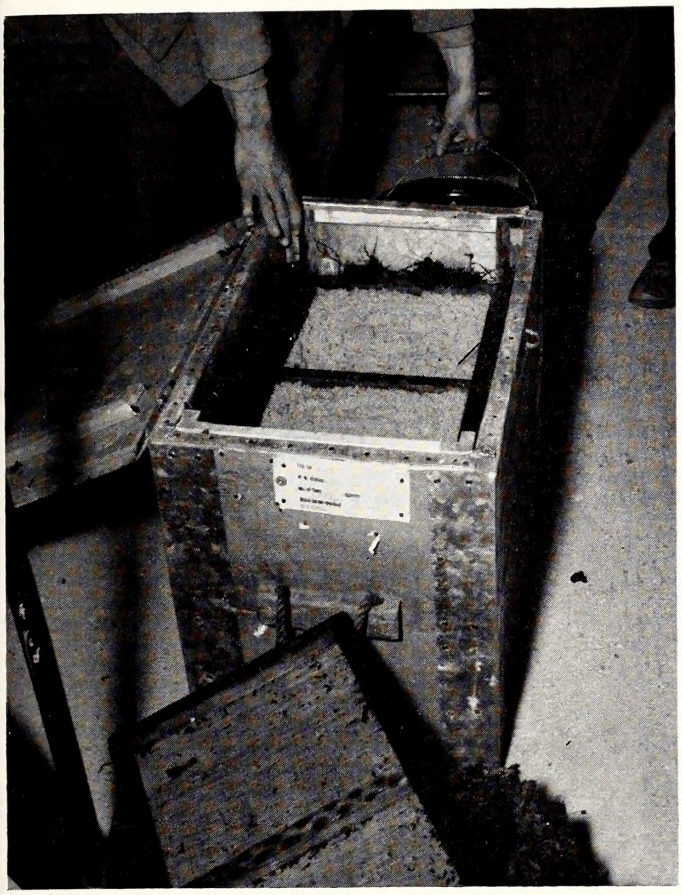
While varying water conditions will affect the coloration of the walleye, generally it is dark olive mottled with yellow, and the blending of the two forms indistinct oblique bars on the back. The belly and lower fins tend to be pink while a characteristic black blotch usually is distinct on the membrane of the dorsal spines.

The walleye is easily distinguished from the pickerel, pike or muskellunge because it has both a front and rear dorsal while the members of the pike family have but one dorsal fin.

The walleye is a heavy nocturnal feeder, and as night approaches it will leave the deeper holes to feed around the shallows, particularly sand or gravel bars and the flats below dams or rapids.

RANGE

Originally, the walleye was found through eastern



The eggs were shipped in a specially constructed container lined with moss and kept cool with chipped ice. The eggs were spread out in trays to prevent damage by gravitational pressure.

Canada to Alberta, and from Minnesota southward through the Mississippi Valley and Great Lakes basin. However, due to the fact that the walleye is so easily propagated by artificial methods, transplanting has brought this fine fish to nearly every state in the Union, with the exception of the far west and extreme south. It is particularly plentiful in the T.V.A. area.

Walleyes prefer moderately deep, clear, flowing waters with rock, gravel or sandy bottoms. Usually the best fishing will be found in those deeper holes where the swifter currents bring in food, or under falls and below rapids, as well as along reefs, ledges or along rocky shorelines.

SIZE

The world's record walleye was taken by Patrick E. Noon, using rod and reel, at Fort Erie, Ontario, Canada, on May 26, 1943, and weighed 22 pounds, 4 ounces. The country over, the average weight will approximate 2 to 5 pounds, but in certain sections, because of more favorable conditions, the average will run higher.

FLAVOR

Even the most particular gourmet would class the walleye as excellent eating. Since its nature causes it to seek out the cleaner, swifter waters the walleye is consistently delicious.

FOODS

Nearly anything that moves or flashes will attract the walleye, thus any small aquatic animal such as minnows of all kinds, frogs, crawfish, worms, etc., fall prey to these busy jaws.

LURES

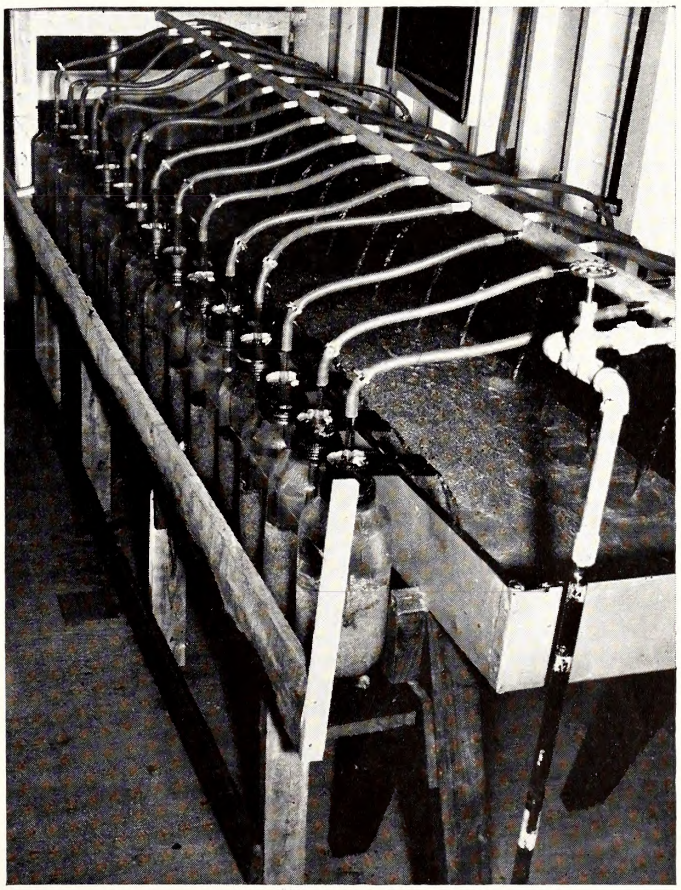
Nearly any active underwater plug, particularly one designed to go deeper than average, which has a good wiggle at slow retrieve, will produce. In weedy territory, spoons and weedless pork-rind lures are better, while surface plugs will produce in late evening. After dark, any diving plug with a violent motion will bring in more walleyes than those with a fluid motion. Feathered minnows, small spoons, spinner combinations, large flies and bass bugs are favored by the fly fishermen.

METHODS

For bait casting, the same tackle used for bass fishing is ideal. That is, the light or medium action tubular steel rod, lures in the 5/8 ounce—or under—class, lines testing 10 to 15 pounds and light action reels. A 10 to 12-pound nylon leader will prevent lost fish from frayed lines, but even this should be changed whenver it shows signs of becoming weakened.

The most popular lures are River Runts, Go-Deepers, Punkinseeds, Vamps, Chuggers, Lucky

(Continued on page 23)



At the Table Rock Hatchery near Morganton, the eggs were put in a battery of hatching jars. Over 80 per cent of the five million eggs hatched, and the fry were stocked immediately.

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

June — the month complete with spring fever, buzzing bees and vacation plans. Fishing has been good for over a month and from the rate that farm ponds are being constructed many folks are looking forward to fun with worms not far from home. They say that there are about five hundred private ponds in Wake County alone!

It is a fine thing to create such a beautiful thing as a pond—but more than beauty, its usefulness as a source of fresh fish for the table, water for livestock and protection in case of fire, make the pond a real asset to a farm property. The initial supply of bluegills, bass and crappie are furnished by federal hatcheries and local representatives check the ponds and give service regarding management and condition of the fish.

All this leads to a normal increase in the fish crop and it is good. Where, then, is there any possible source of trouble? There is none *provided* that the number of fish is kept down and therein lies a great problem. Probably the greatest drawback to the farm pond idea is that enough fish will not be taken out! Normal reproduction will set up such competition for food that three year old bass in an unbalanced pond will be no larger than one year old bass in a balanced pond.

In view of this, how about opening up some of these ponds to the public or your local wildlife club—these folks will be happy to pay for the privilege of doing your pond a service and they will be doing just that. Also, I'd like to suggest that you consider the fact that school is out for the summer. There are dozens of youngsters in your community who *need* to "go fishin'" and this, their early fishing experience, can be guided into the paths of good sportsmanship and conservation by an invitation to YOUR pond! — W.D.

Mrs. J. F. Hunter of Inez, N. C., asks a question which is difficult to answer, "I have been wondering about hamsters. It looks to me like they would become as bad as rats (if released) . . . What do you think?

There is always a possibility that any domestic animal could revert to the wild state if released in an environment suitable for it to live and reproduce. It is a dangerous thing to release species of birds or animals which have no economic or sporting values and in the case of members of the rodent family to which hamsters belong the possibility of a harmful result is greater than any possible good.

Mr. I. J. E., Fountain, N. C., asks, "I would appreciate you answering this letter as soon as possible. Can you run coons with dogs if you don't carry any kind of gun or ax? I would like to have full information on this."

I assume the writer is concerned about running or training coon dogs in the closed season. North Carolina statutes provide that "It shall be lawful for individuals . . . to run trials or train dogs at any time: Provided, that no shotgun shall be used and that no game birds or game animals shall be taken during the closed season by reason thereof . . ." We should like to recommend that all dogs be confined during the months from the first of April to the first of September in order to protect young game.

Mrs. J. L. S. of Route 3, Lexington, N. C., asks "Is it against the law in North Carolina to kill a buzzard?"

These birds are listed in the North Carolina statutes as being unprotected. They may be killed or their nests and eggs may be bought and sold at any time, except that they may not be killed on Sunday.

For What It Is Worth

In response to my request in the April issue for information about catching shad on artificials, Mr. John W. Garner, proprietor of "The Anchor", Shallotte Point, N. C., very kindly writes as follows:

"In your April edition of the WILDLIFE IN N. C. you had an article on catching shad on artificial bait.

"I have had quite a bit of experience at this and some right good luck. I still believe I have a lot to learn on the art of catching shad with artificial bait, but what I do know about it I will be glad to pass on to someone else that is interested in this kind of fishing.

"My friend W. H. Murray of Shallotte Point, N. C., and myself first started catching shad three years ago in the St. John's River near Orange City, Florida. One afternoon we landed 98, all nice size fish.

"After coming back to N. C. we decided to try it in N. C. waters. We have had some very good luck in the Cape Fear River above the bridge near Wilmington, N. C., and also in Catfish and Indian Creek.

"The best lure we have found is the Barracuda No. 1 Reflecto Spoon fastened to about five feet of 12 or 15 pound test nylon leader by a No. 12 snap swivel. The leader is fastened to a 25 pound test plastic line by a No. 12 barrel swivel. We use 50 yards of 25 pound test plastic line and troll about 40 yards behind the boat as slow as we can idle the motor. This is the best and only way I have ever found catching shad with artificial bait, although I have never tried using flies, but when you hang onto one of these good size fish, you can have some real fun."

From 1st Lt. Claude J. Smith, U. S. A., Arlington, Virginia, the following interesting note:

"Sir:

My copies of the magazine "Wildlife In North Carolina" are sent to a friend who is a guide in the best hunting country on this globe, Canada and Alaska notwithstanding. They go to Nairobi, Kenya Colony, British East Africa. Thought this might be interesting to you."

Ed. Note: East Africa is a long walk, but we are glad that *Wildlife In North Carolina* can make the trip.

Bouquets

"Enclosed please find a renewal of my subscription to WILDLIFE IN NORTH CAROLINA. Do not let me miss a number because I think it is extra fine. Thanks.

E. W. B.
Jackson Springs, N. C."

In the March 1950 issue the following statement regarding young deer appeared in an article entitled "The White-Tailed Deer": "This coloration disappears during the second year . . ."

This should read: "The spots disappear during the first year."—(Ed.)

(Continued from page 21)

13's and Crazy Crawlers. For pork chunks or live bait, the Stanley Weedless Hook is an outstanding favorite.

For trolling, the same basic tackle is used except that heavier lines and leaders together with a slightly heavier rod are favored.

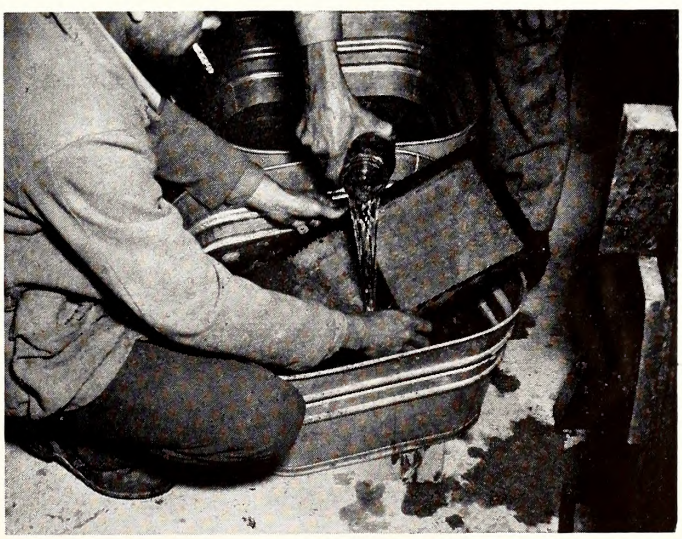
Flycasters use the same basic tackle for walleyes that is used for bass fishing. When lighter lures are used, a bass-trout action is preferred; when the heavier lures are used, particularly in fishing against heavy current, the power-plus actions are better because of more backbone. Here again, nylon leaders of 8 to 10 pound test should be used—and watched, for weakening signs.

Still-fishing or live bait tactics require the same simple outfit that most of us learned to fish with. A cane pole, sinkers, bobber and a can of bait. A june-bug spinner with trailing nightcrawlers is deadly whether still fished in current or trolled behind a boat. At times, the walleye bites gently—so—the hook should not be set too quickly; give the quarry time to get the bait completely into its mouth.

Sometimes the walleye is confused with its closely related cousin, the SAUGER (*Stizostedien canadense*). The sauger is also called sand pike, gray pike, pike perch, pickering, horsefish and jack. Its eye is smaller and average weight is less than the walleye and its game qualities are noticeably inferior.

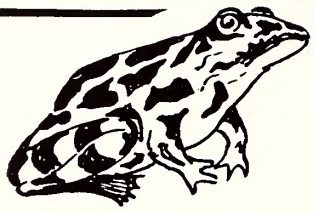
It may take considerable scouting around to locate "old marble eye"—but, once you find the spot which rates the walleye's favor for that particular day, you have uncovered a bonanza.

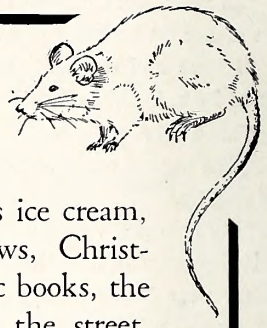
It is conceded that a lake walleye does not have the fight of a stream walleye which battles current nearly every second of its life. However, a walleye from any part of the country is consistently desired as a table fish more than the other species found in the same waters.



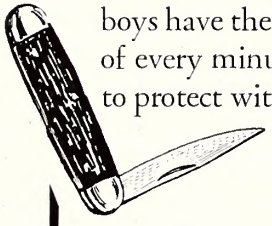
Due to a short delay in aerial transport, some of the walleye eggs were killed. Shipping trays had to be washed and dead eggs removed.

What Is A Boy?



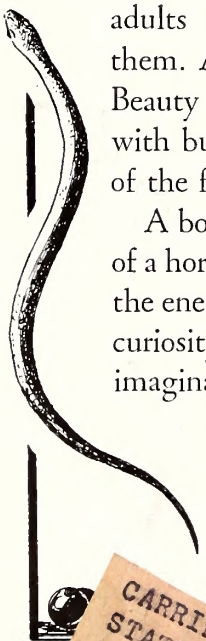


BETWEEN the innocence of babyhood and the dignity of manhood we find a delightful creature called a boy. Boys come in assorted sizes, weights and colors, but all boys have the same creed: To enjoy every second of every minute of every hour of every day and to protect with noise (their only weapon) when their last minute is finished and the adult males pack them off to bed at night.



Boys are found everywhere—on top of, underneath, inside of, climbing on, swinging from, running around, or jumping to. Mothers love them, little girls hate them, older sisters and brothers tolerate them, adults ignore them, and Heaven protects them. A boy is Truth with dirt on its face, Beauty with a cut on its finger, Wisdom with bubble gum in its hair, and the Hope of the future with a frog in its pocket.

A boy is a composite—he has the appetite of a horse, the digestion of a sword swallower, the energy of a pocket-size atomic bomb, the curiosity of a cat, the lungs of a dictator, the imagination of a Paul Bunyan, the shyness of a violet, the audacity of a cracker, and when he makes something he has five thumbs on each hand.

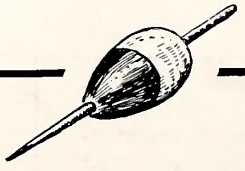


Win Donat

He likes ice cream, knives, saws, Christmas, comic books, the boy across the street, woods, water (in its natural habitat), large animals, Dad, trains, Saturday mornings, and fire engines. He is not much for Sunday School, company, schools, books without pictures, music lessons, neckties, barbers, girls, overcoats, adults, or bedtime.

Nobody else is so early to rise, or so late to supper. Nobody else gets so much fun out of trees, dogs, and breezes. Nobody else can cram into one pocket a rusty knife, a half-eaten apple, 3 feet of string, an empty Bull Durham sack, 2 gum drops, and 6 cents.

A boy is a magical creature—you can lock him out of your workshop, but you can't lock him out of your heart. Might as well give up—he is your captor, your jailer, your boss, and your master—a freckle-faced, pint-sized, cat-chasing bundle of noise. But when you come home at night with only the shattered pieces of your hopes and dreams, he can mend them like new with the two magic words—"Hi Dad!"



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Wildlife
IN NORTH CAROLINA

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TOMORROW'S SPORTSMEN

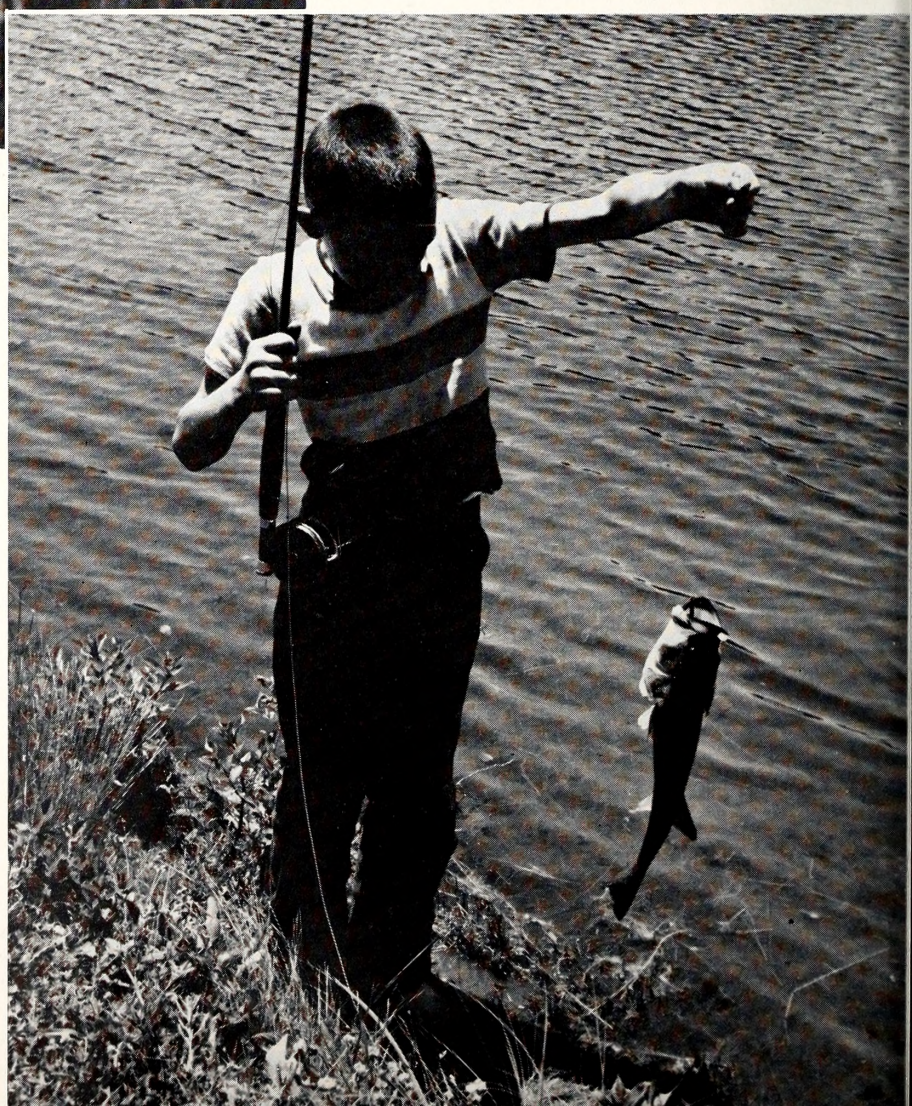
In their hands lies the future of North Carolina's wildlife.

Youngsters have an inborn love of the out-of-doors and its wild creatures.

As they learn to hunt and fish they must learn the principles of wildlife conservation.

When they become adults they will be tomorrow's sportsmen.

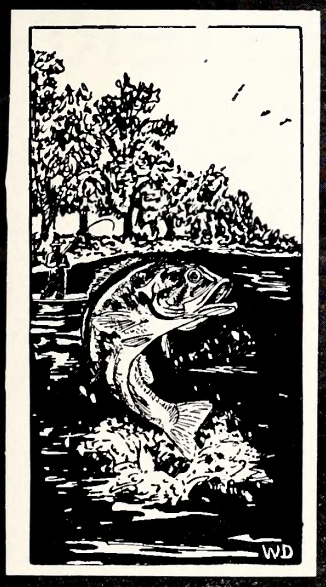
(Photos by Margaret Fisler)



Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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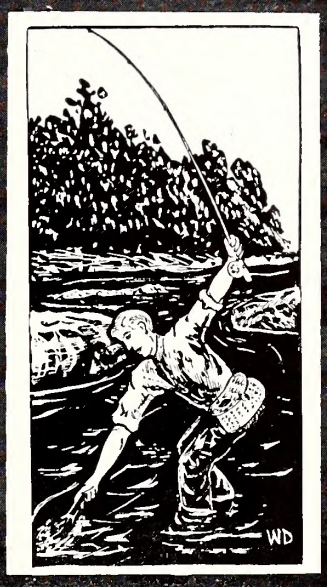

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ROD AMUNDSON, Editor
WIN DONAT, Art Editor
GLORIA MOORE, Circulation

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COVER

As a follow-up on the Chesapeake Bay Retriever which appeared on the May cover, Donat has depicted the lovable nature of the Beagle, one of North Carolina's most popular sporting dogs.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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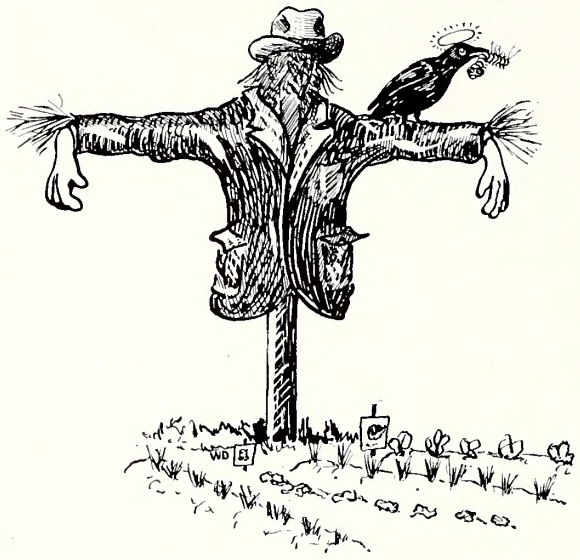


THE EASTERN CROW

Sinner or Saint, You Have to Admire This Smart Bird

By ROD AMUNDSON

History

A thief, a scoundrel, pirate, marauder, scavenger, racous-voiced despoiler of duck nests—these are but a few of the printable adjectives ascribed to the crow. He is a clown, a mimic, a tormentor, and a tender, loving parent. In addition to this and more, he is one of the smartest of birds, ranking high in intelligence and physical development. One of the most universally hated and persecuted of birds, the crow has followed mankind throughout the limits of agriculture in the temperate zone, and has held his own in number despite massed gunfire, bombing, and poison.

One cannot help admiring such a bird even though it steals corn, chickens, robs birds nests, then sits at a safe distance in a tree top and literally laughs at the whole affair. Farmers hate crows. Sportsmen pretend to, but if crows were ever reduced to danger of extinction, you would hear a loud outcry from crow hunters for the protection of a favored sport. Here is an indication of such a trend toward the conservation of crows.

Near the town of Hastings, Nebraska, is a tract of woodland which has become famous as a mass roosting place of crows during the cold winter months. Estimates of the number of crows frequenting the rookery have ranged up to half a million birds. Soon after the war, when shotgun ammunition again became plentiful, hundreds of sportsmen made nocturnal raids on the roosts, killing crows by the thousands. Everyone had a good time until the crows began avoiding the woodland tract and looking for new places to roost. Then, by a gentlemen's agreement, the crow shooters decided to no longer invade the crow roost. Instead they agreed to do their shooting in the twilight hours as the crows flew into the roost from the surrounding countryside. Those crow hunters wanted to preserve their sport. There was some talk of a bag limit, but this was never accomplished.

North Carolina has two types of crows: the common eastern crow, which ranges from the coastal plains through the mountains, and the fish crow, a larger species, which is confined to the coastal margins.

Crows have close relatives throughout the northern hemisphere. The English variety is the raven, a larger bird than any North American species. Crows extend throughout Europe through Siberia, and northern Asiatic lands. Everywhere they are unwanted and persecuted. Old Henry VIII of England placed a bounty on crows and crow-like birds. The oldest commonly known reference to the crow is in the Bible, a reference to the ravens bringing food to an Old Testament prophet.

Characteristics

The common eastern crow is a relatively large bird, being about 20 inches long, with a corresponding wingspread. The general appearance is a solid black, although in the winter plumage the black becomes irridescent violet over the wings and on the neck feathers. After the breeding season is over, the birds go through a complete moult, thus renewing the black and irridescent plumage from the worn, brownish hues of the summer.

(Photo courtesy U. S. Fish and Wildlife Service.)

The eastern crow is the most numerous of the crow family. Crows are found throughout most of North America and the northern part of Europe and Asia. Everywhere they are considered pests.

To call the voice of crows a song would be taxing the most elastic imagination. Crows do, however, have a repertory of utterances which may vary with the situation. In flight the call is a simple, harsh "caw, caw, caw." But let a number of crows encounter a fox or a tomcat in the woods, and a clamor of caws, shrieks, and cries is set up which can completely un-nerve the harried animal. Hawks and owls are arch-enemies of crows, and any encounter between the two kinds of birds is sure to bring on a chorus of avian profanity.

Many books have been written about the community life of crows. All give the birds credit for a great deal of intelligence. For example, while a flock of crows help themselves to sprouting corn in a farmer's field, one member of the flock is left on sentinel duty. At the approach of danger, the sentinel sets up a fuss that can be heard for miles. The flock then heads for the tall, deep woods.

Many a hunter will give his word that crows recognize guns when they see them, and there is considerable evidence to bear out this belief. You can ride on a piece of farm machinery all day, without a gun, and have crows come within a few feet of the cultivator to pick up insects and grubs. But take a gun along for the purpose of shooting a crow, and the birds will either leave the field or stay just out of gun range.

But crow intelligence is far from infallible. Hunters go out to a thicket or a prefabricated blind and call crows in to the gun until they are tired of shooting. A number of good artificial crow calls are on the market, and may be used with considerable success. Some crow hunters call the birds vocally. Either method can be hugely successful.

As Pets

Many a crow has been raised in captivity, to the delight and consternation of its benefactors. Young birds taken from the nest can be easily raised on nearly any food from the kitchen table. They seem to forget their ancestory, and will almost entirely ignore their wild cousins. But the person who takes on a crow for a pet is letting himself in for plenty of trouble. Crows are congenital thieves, and no object about the place is safe from the pet crow if it can be picked up and flown away with. Many a housewife has searched in vain for thimbles, scissors, hair ribbons, and a variety of bric-abrac, only to learn that the crow has carried it off and hidden it.

If there is a pet cat or dog in the household, it might be well for the animal to make friends with the crow. Otherwise, it is in for a life of calculated torture. The daily life of a pet crow can be described in three words: eating, sleeping, and tormenting.

Because of their versatile voices, pet crows easily learn to say simple words. This, incidentally, can

(Photo courtesy U. S. Fish and Wildlife Service.)

Even when they are fully feathered young crows demand food from their parents. This one has ventured from its nest.

(Photo courtesy U. S. Fish and Wildlife Service.)

Two fully feathered young crows on the nest. They set up a continuous clamor for food.

be accomplished without the cruel practice of splitting their tongues.

Breeding

Despite all of the invective heaped upon them, crows do an admirably conscientious job of rearing their young. Their domestic life is peaceful, and the devotion of parent birds to each other and to their young is remarkable.

Mating begins with a period of courtship during which several males seek the favor of a female. At this time the males do considerable showing off in aerial acrobatics and in sounding love calls. The latter is definitely unattractive to the human ear, but apparently it serves the purpose for which it is intended among crows. Once a successful suitor has been selected, the pair drive off rivals and set about the task of housekeeping.

Crows construct elaborate nests, although they will sometimes take over the abandoned nests of squirrels or hawks. The nests are made of rather heavy twigs which are piled on top of each other until a considerable pile has been amassed. Much attention is given to lining the nest with dead leaves or tufts of cotton, twine, old rags, moss, or any other soft material. Altogether, the nest is substantial and warm.

From four to six greenish-gray, blotched, spotted, or lottled eggs are laid in the nest cavity. Occasionally two females share the same nest, and may put in as many as a dozen eggs. The incubation period is 18 days. The youngsters are particularly unlovely, being a semi-naked pinkish color with an indifferent array of gray down. Pinfeathers soon appear on the wings and tail, and in a very short time the fledglings are entirely feathered.

As soon as the young crows are old enough to take food, they set up a terrific clamor to obtain it. They never seem to get enough. The hunger cry is an oft-repeated, dry squawk, with a falling inflection. The din increases as the hard-working parents approach the nest with food, and continues in subdued choking, gobbling sounds as the food goes down. Young crows require about half their weight in food each day, and as they approach maturity, this imposes a heavy tax on the energies of their parents.

At the age of five weeks young crows are developed enough to make trial flights, but their demand for parental care goes on after they have learned to fly from tree to tree.

Food Habits

It is the food habits of crows that get them into trouble. They incur the ire of farmers by stealing baby chicks, growing corn, and corn in the milk stage. In the nesting grounds of ducks and geese, crows destroy countless eggs, and thus arouse the wrath of sportsmen. Where crows find quail and pheasants nests, they will eat the eggs. They have been known to plunder nests of new-born cottontails.

There are many items in the diet of crows which can be put on the credit side of the ledger. They eat an almost endless variety of worms, grubs, beetles, and other insects and insect larvae. About three-fourths of their diet is vegetable matter, and one-fourth animal material. In many localities

(Photo courtesy U. S. Fish and Wildlife Service.)

A typical crow roost. Sometimes crows roost so thickly in trees they break the branches.

(Photo courtesy Nebraska State Game Commission.)

This is a crow bomb made from a paper mailing tube loaded with buckshot and a half stick of dynamite. Note prima-cord near bottom of bomb.

where buzzards are not present to assume the responsibility for removing carrion, crows perform the service nicely. They take a few live animals such as field mice or immature cotton rats, but such occurrences are rare.

Enemies

Crows have a number of enemies besides man. Hawks and owls wage constant war on crows, and their nests may be plundered by red squirrels. Little is known regarding infections by diseases or parasites.

Migration

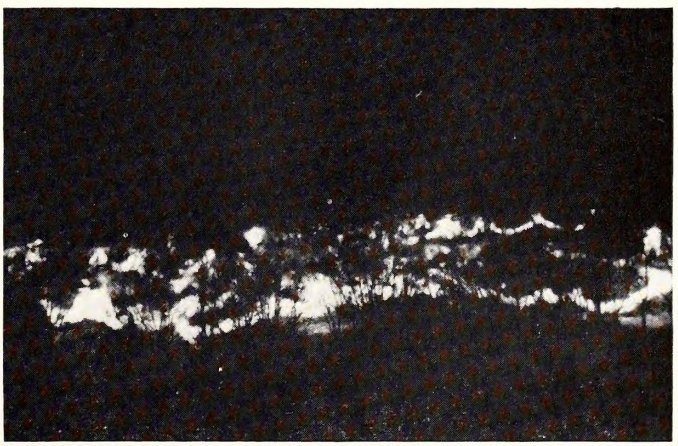
Although crows migrate with nothing like the spectacular flight of waterfowl, there is a definite seasonal north-south movement. They leave the northern extremity of their nesting grounds in the fall and migrate southward, to return again in the spring. It is during their winter visitation that they gang up in huge rookeries. The rookeries, or roosts, are strictly a night-time proposition. Toward sunset they may be seen wheeling in for miles to the roosting spot. In some of the midwestern roosting areas, the evening flight of crows from all directions to the rookery must be seen to be appreciated. Gunners who place themselves in concealment close to the roosts get in some fine pass shooting. Early in the morning the birds spread out from the rookery like spokes in a wheel. They have been followed as far as forty miles in their daily migration to seek food. During the winter aggregation period crows seem to get a sense of safety in numbers. They invade small towns, alight on peoples' lawns, and raid backyard garbage cans. Newspapers (in the midwest) have run pictures of crows taking food from dogs' feed pans, the dogs apparently having given up trying to keep the raiders away.

Control

In many states, where huge concentrations of crows gather in roosts, sportsmen and conservation officials stage crow-bombing campaigns which take a heavy toll of crows. Small bombs are made from half-sticks of dynamite surrounded by buckshot or coarse gravel in cardboard or metal containers. The bombs are placed in low trees where the crows gather so thickly that branches break under their weight. The bombs are connected by prima-cord, a World War II development which looks like a small clothesline rope, and which explodes along its entire length with terrific force. The prima-cord explodes all the bombs at once, and every crow within several feet of the bombs may be killed.

Another device being tested is a shotgun version of the light mortars used by infantry troops. A heavy piece of gas pipe, or a steel post driver, is set up on a simple frame so that the closed end rests on the ground and the open end is aimed at a tree full of crows. The device acts like an old fashioned muzzle-loader, with a charge of powder, wadding, several handfuls of number six shot. The charge may be detonated electrically, and if the crow mortar is properly aimed, several hundreds may be killed in a single firing. It should be pointed out that such devices are extremely dangerous if improperly handled, and in every case should be fired from a safe distance.

No thinking person would want to see crows completely exterminated, but all agree that they must be kept under control. Hunters can shoot them all they please, and pest-control experts can dynamite them to their heart's content (special permit required in North Carolina), but like flies, taxes, and the indigent, crows will always be with us—to be cussed or praised, as the case may be.



(Photo courtesy "Outdoor Nebraska.")

This is how one hundred fifty crow bombs look when they go off in the dark. The narrow lines of light are exploding prima-cords.

Wildlife in Ye Gay Nineties

By JACK DERMID

Illustrations by Arnold P. Sherrill

Back in the "good old days" before bag limits were placed on waterfowl, boatload kills of ducks were not uncommon in N. C. coastal areas.

IF the records of the old timers give a true picture, hunting in North Carolina was worth bragging about during the gay nineties. We had wildlife then, game and otherwise, just as we have now; but during the passing years hunting pressure and habitat conditions have changed throughout the state, and accordingly our wildlife has had its ups and downs. In contrast hunters, outdoorsmen, and nature observers are still much the same. Then, as today, they wrote diligently of their outdoor experiences and sent them to their editors for publication. Here are a few interesting excerpts about Tar Heel wildlife that appeared in the former national weekly, *Forest and Stream,* during the middle 1890's.

A news article of November 10, 1894, paints a rosy picture of game conditions in the western section of the state. How does next year's outlook compare with this?

"The game laws in North Carolina have had an excellent effect. The people of the state, especially in the western section, are law-abiding people and it is rather a peculiar fact that they have insisted strictly and invariably that the game laws be carried out to the very letter. The result is that the game in the mountains of western North Carolina is much larger than it has ever been before . . . It is no trouble whatever to flush a dozen coveys (quail) within a half-day's hunt, even in the section surrounding the city of Asheville . . . The first flight of woodcock has just taken place. The lowlands along the French Broad River are said to be teeming with this splendid bird, and the hunters are anxious to get a shot at them . . . The mountaineers bring the news that there is a large quantity of pheasants (grouse) all over the mountain ranges, and a larger number of deer to be seen this fall than in a long while . . ."

Game laws have certainly changed since "Idaho" and his party from New York hunted shore birds on Currituck Sound during the summer of 1895. He writes in the August 24th issue:

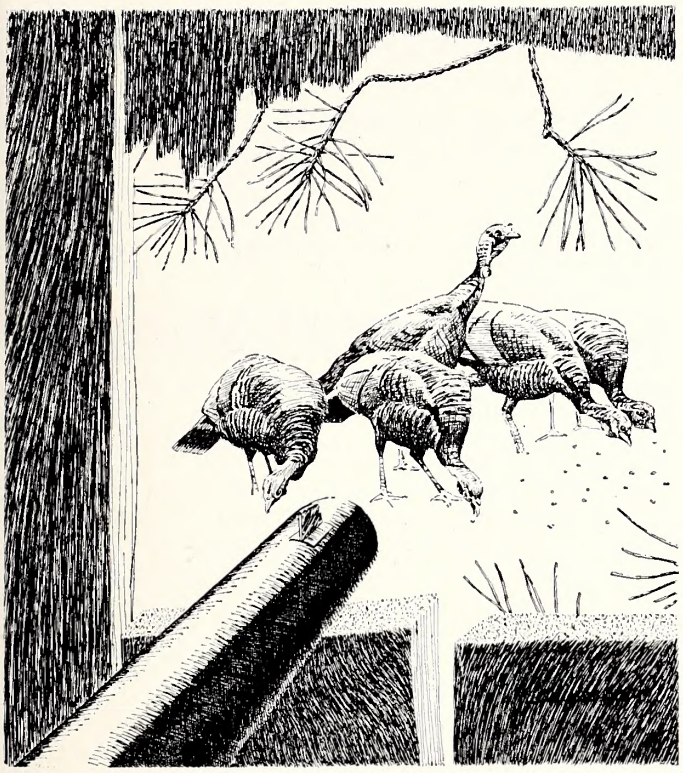
"We left New York on the afternoon of July 31 and reached Currituck Friday evening . . . We had brought down from Norfolk a ton of ice to freeze our birds so that if we had a little luck we could bring a few back with us to the friends at home. Saturday A. M. we were all early on the ground each in a separate blind with decoys out and ready for the birds. We did not have to wait long, as they were very plenty . . .

"Monday we were out before daylight . . . before it was really light enough to see, the guns were speaking. I have seldom seen the birds so thick, not flock shooting, but constantly coming along in small bunches of two, three or four. It made the prettiest kind of shooting, as the birds flew well and strong . . . I should really be ashamed to tell you how many F. R. ate or how many shells we used, but we came out better than 75 per cent . . .

". . . Leon was training a live swan for decoy purposes, and tells me that he will have three or four more by fall, also a fine outfit of live geese and other decoys . . . We shot a willet, winter and summer yellow-leg, robin, snipe, black-breasted plover, turnstone, grass plover and kreekers . . ."

This letter from C. H. indicates that turkey hunting prospects were excellent about New Bern, N. C., in 1895. It's illegal to bait game today, however.

"New Berne, N. C. Nov. 1. Today the shooting season opens here for turkeys and quail, and I am pleased to say that there will be an abundance of both. The owners of a 1,000-acre forest tract on Island Creek, ten miles from New Berne, are throwing out bait today so as to attract the turkeys and hold them . . . It is claimed that there are 200 tur-



Wild turkeys were abundant and it was a common practice to obtain an ample Thanksgiving dinner by poking a gun barrel out of a barn window at a flock of turkeys.

keys at least in that neck of the woods. Down near Maysville, . . . there are many large gangs of turkeys, as well as at Riverdale . . ."

In the November, 1895, edition of *Forest and Stream* there is a letter to the editor from H. S. of Highland, N. C., relating some of his observations on rattlesnakes. It makes interesting reading, if you do not take it too seriously!

". . . First let me set your correspondent, who averred that the fang of the rattlesnake was double, at his ease for what he avers is true. I send you a drawing made this past summer of the fang on one side of the jaw of a rattler that I caught and dissected for the satisfaction of supporting my frequent conclusion that the cyclopaedias are not of much account on scientific subjects. The Brittanica says the fang is single and is set in the center of the mouth on the upper part of it, the palate, I should say it was. But it is no such thing; there are two distinct fangs, one solid and one hollow . . . The two fangs are a true copy of some taken from a snake which I caught and held by the throat in a pair of blacksmith tongs while I examined his mouth carefully. Then I killed the beast by decapitating his head from his body, as was once said by a noted historian, to be sure the operation was complete, and then the mouth opened and shut and the fangs were exserted and drawn in again, just as the sting of a wasp is. One of the fangs is hollow. It is the shorter one, and it seems as if when the creature strikes it first makes the wound and then by the second fang, which is a real hypodermic syringe, it injects the virus into the wound.

". . . The snake was a yellow diamond back and I stepped over it while it lay coiled under the hay as my men were raking it off a meadow on the low bank of one of my ponds. Doubtless this was the same snake I saw in the water a few days before taking some of my young ducks, drawing them down by the feet and swimming to the bank with them . . ."

Mild weather during the beginning of the season slowed down shooting in 1895 in Currituck County as it often does today. A. C. writes from Van Slycke's Landing on December 8.

"The opening of the shooting season here in Currituck Sound did not promise much sport . . . Up to about December 1 but little shooting was done, the best score of which I heard being forty birds, all of them common ducks . . .

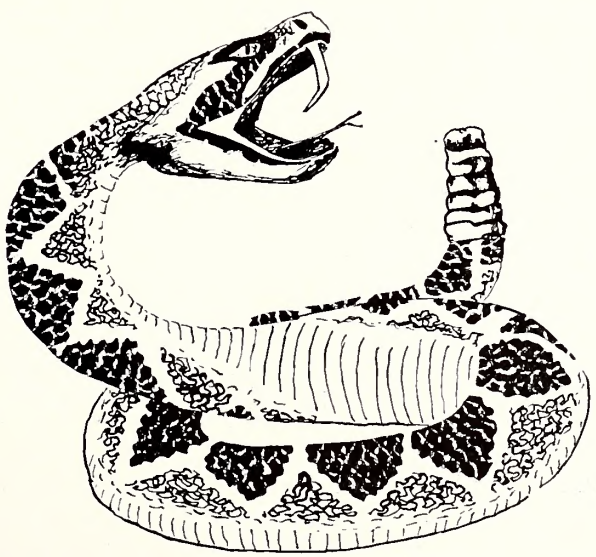
"The change of weather which came about December 1 brought on a lot of birds, and since that the shooting has greatly improved. Bags of fifty, sixty, and seventy birds have been made and a good proportion of those shot are widgeons.

"It seems evident that the scarcity of birds at the opening of the season was due to the mild weather, and that a little severe cold will drive the birds to us in something like their usual numbers . . ."

Even buzzards had their troubles in the nineties. This incident was titled, "Buzzard and Bolt of Jove." October 12, 1895.

"The Reidsville, N. C. Weekly says: A remarkable occurrence was witnessed by Messrs. Henry Jeffries and George Ellington, of the Oregon section, recently. They noticed a buzzard flying in the midst of a storm, and pretty soon it was struck by lightning,

(Continued on page 10)



aps

The Encyclopedia Brittanica once insisted that rattlesnakes had a single fang set in the middle of the upper jaw.

NORTH CAROLINA

By James Chadwick

North Carolina etheral inspired in riches full
Attired by God, perpetual, majestic, wonderful
Nature incarnate in your beauty still
Breathed by God, His holy will.

Your mountains lifting their lofty peaks on high
Pushing their scenic grandeur to the sky
Statured tall in sacred might
Inspiring souls as they pass by.

Apollo swiftly drew his rein
Awed to find such scenic gain
Spending time that he should use
Seeing celestial serenity in his review.

The deer in flight
The fox at night
Wide mouth bass, brim, and pike
Carolina, indeed, a sportsman's paradise.

Alder trees and bubbling brooks
Rippling grain by the shady nook
Open plains with pumpkin ripe
Into the mountains down the country side.

The snowflakes myriad castles diamonds blow
The dogwood in sequestered valley grow
The jasmine burning bright upon the sand
Touched by God His omnipotent hand.

The lakes tranquil quiet at night
Painted shadows coloring the twilight
The wide mouth bass leap to rise
The day is done, restful peace, perfect sight.

Created in beauty
Exalted in splendor
North Carolina eternal be
Endowed by God, His masterpiece.

(Continued from page 9)

one wing being severed from the body. They found the wing and it was scorched by the bolt, and the remainder of the unfortunate bird was found soon afterward."

"Idaho" writes again, this time concerning waterfowl shooting in Currituck County. Compare the length of the legal season then with the one now. His letter appeared January 18, 1896.

". . . We have been to the Old Currituck Inlet Gunning Club for the purpose of winding up the old year in a blaze of—shotguns, and we certainly have had the finest kind of shooting . . . I think it is the finest shooting ground in the South . . . the water is shallow, averaging 3 ft., with plenty of wild celery and "widgeon grass," so called by the natives.

". . . The geese have been very plenty and swans in fair quantity, and as for ducks, you could not look anywhere without seeing ducks, and the variety is large. We shot mallards, canvasbacks, redheads, widgeon, black ducks, sprigs, ruddy ducks and teal, besides brant, Canada geese and swans.

"The law allows four days in a week for shooting, which gives the fowl some chance to rest and feed. The season commences on October 20 and ends March 20 . . .

"Leon White has a number of live decoys of all kinds—swans, geese, brant and duck. In particular, I want to mention an old gander who must be possessed of at least seven devils; I have often wondered why he is so revengeful against his own tribe. May be he was jilted in his younger days and is now getting even; but the fact remains that he will call a bunch of geese to him, and when the guns go off and a number are killed or wounded the old fellow will sit right down and laugh, and get gay and kittenish; but if the shots are not successful he will turn right round and sulk. May he live long and prosper . . ."

California Begins Multimillion Dollar Duck Program:

California's sweeping waterfowl management program, financed by funds made available from pari-mutuel horse racing receipts, got under way recently with the acquisition of 8600 acres of land costing $650,000, according to the Wildlife Management Institute. The State Wildlife Conservation Board, in announcing the purchase of the Grizzly Island tract in Solano County, stated that this is the first acquisition in the board's proposed four-million dollar state-wide waterfowl management program.

The area will be developed to provide a duck and goose refuge, feeding and resting area, and public shooting grounds. Fish and Game Commissioner William J. Silva, former chairman of the board, indicated that strategically located waterfowl lands of known crop-producing capacity and water availability will be favored over cheaper lands. It is felt that such lands will return more and better results in the long run than low-cost, marginal lands of doubtful productivity. One of the primary objectives of the program is to reduce crop damage by waterfowl on nearby agricultural lands.

The California Wildlife Conservation Board, with Seth Gordon, internationally famous wildlife administrator and authority acting as consultant, is setting up a chain of refuges and public shooting grounds which will alleviate crop damage, provide the hunter who is not a member of a club with a place to shoot, and furnish protected wintering grounds for waterfowl in the Pacific Flyway.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

THE WILDLIFE RESOURCES COMMISSION MET AT FAYETTEVILLE ON JUNE 14 TO SET THE 1950-1951 HUNTING REGULATIONS. IN GENERAL THERE WERE FEW CHANGES FROM LAST YEAR'S RULES. THE ABSTRACTS OF THE REGULATIONS HAVE BEEN RUSHED TO THE PRINTERS SO THAT THEY WILL BE IN THE HANDS OF LICENSE DEALERS BY AUGUST 1. ENOUGH ABSTRACTS OF THE HUNTING REGULATIONS WILL BE PRINTED TO ALLOW EVERY HUNTING LICENSE BUYER TO OBTAIN A COPY. IF YOU ARE UNABLE TO OBTAIN A COPY FROM YOUR LICENSE BUYER OR FISH AND GAME PROTECTOR, YOU MAY GET ONE BY WRITING DIRECTLY TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH.

INFORMATION RECEIVED FROM THE NEW MEXICO STATE HEALTH DEPARTMENT AND THE NORTH CAROLINA STATE BOARD OF HEALTH INDICATES THAT THERE IS GREAT DANGER OF AN OUTBREAK OF BUBONIC PLAGUE SPREADING AS FAR EAST AS NORTH CAROLINA. IT IS BELIEVED THAT THE IMPORTATION OF GAME ANIMALS FROM OTHER STATES MAY BRING ABOUT SUCH AN INFESTATION.

THE NEW MEXICO STATE GAME COMMISSION DOES NOT HAVE THE AUTHORITY TO PROHIBIT THE EXPORT OF ANIMALS FROM THAT STATE AND IS HELPLESS TO CHECK THE EXPORTATION OF ANIMALS WHICH ARE KNOWN TO BE INFECTED WITH BUBONIC PLAGUE. HOWEVER, THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, UNDER STATE LAW, HAS THE AUTHORITY TO PROHIBIT IMPORTATION OF WILD ANIMALS FROM OTHER STATES. THE LAW REQUIRES THAT PERSONS DESIRING TO IMPORT ANIMALS FROM OTHER STATES MUST OBTAIN A WRITTEN PERMIT FROM THE DIRECTOR OF THE WILDLIFE RESOURCES COMMISSION BEFORE IMPORTING SUCH ANIMALS.

BUBONIC PLAGUE DISEASE ORGANISMS MAY BE TRANSMITTED FROM ANIMAL TO ANIMAL AND FROM ANIMALS TO HUMANS BY LICE AND FLEAS. THUS ANY FOXES, RABBITS, OR SQUIRRELS IMPORTED FROM STATES TO THE WEST OF NORTH CAROLINA MAY POSSIBLY BE INFESTED WITH DISEASE-CARRYING FLEAS, OR ACTUALLY INFECTED WITH BUBONIC PLAGUE.

FEDERAL HEALTH AUTHORITIES AND STATE HEALTH DEPARTMENTS BELIEVE THAT FEDERAL ACTION MAY BE NECESSARY TO PREVENT BUBONIC PLAGUE FROM SPREADING THROUGHOUT THE COUNTRY. THIS IS A GRAVE SITUATION. BUBONIC PLAGUE IS A HIGHLY INFECTIOUS DISEASE AND HAS KILLED MORE HUMAN BEINGS THROUGHOUT HISTORY THAN ALL WARS COMBINED.

BY ITS UPLAND GAME HABITAT RESTORATION PROJECT, THE WILDLIFE RESOURCES COMMISSION AND COOPERATING SPORTSMEN AND FARMERS PRODUCED AND PLANTED ENOUGH BICOLOR LESPEDEZA SEEDLINGS TO MAKE A ROW OF QUAIL COVER FIFTEEN FEET WIDE EXTENDING FARTHER THAN FROM RALEIGH TO MURPHY. BICOLOR LESPEDEZA IS ONE OF THE BEST KNOWN MEANS OF PRODUCING QUAIL, AND SUCH A HEAVY PLANTING OF THESE SEEDLINGS SHOULD PRODUCE A NOTICEABLE EFFECT ON QUAIL PRODUCTION AND QUAIL HUNTING IN THE FUTURE.

THE WILDLIFE COMMISSION PRODUCES LESPEDEZA AND OTHER GAME FOOD AND COVER PLANTS IN ITS OWN NURSERIES AND EXPECTS TO EXCEED THIS YEAR'S RECORD DURING THE NEXT PLANTING SEASON.

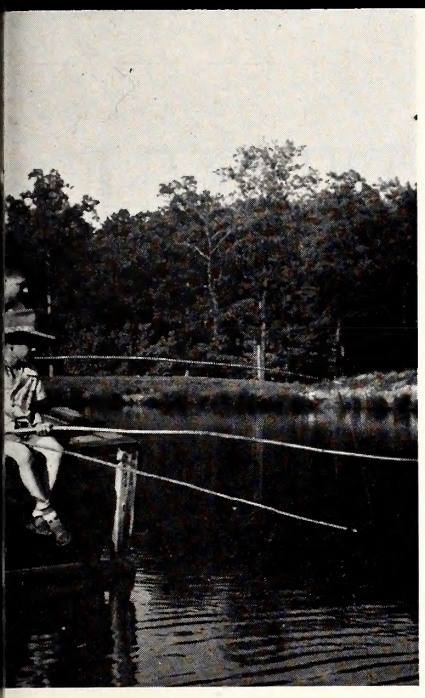
IN ADDITION TO THE PROGRAM OF PUTTING OUT SUCH COVER PLANTS AS BICOLOR LESPEDEZA, THE WILDLIFE COMMISSION DISTRIBUTED SEVERAL TONS OF MIXED FOOD PLANTS FOR WILDLIFE THROUGHOUT THE STATE. THE FOOD PLANTINGS WERE DISTRIBUTED IN TEN POUND BAGS OF ASSORTED SEEDS.

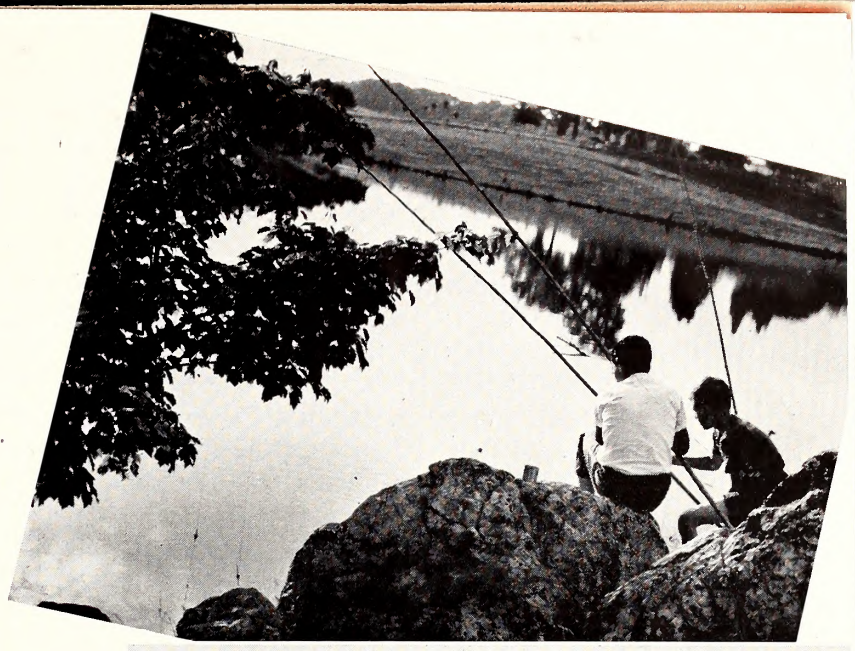
"IN THE GOOD

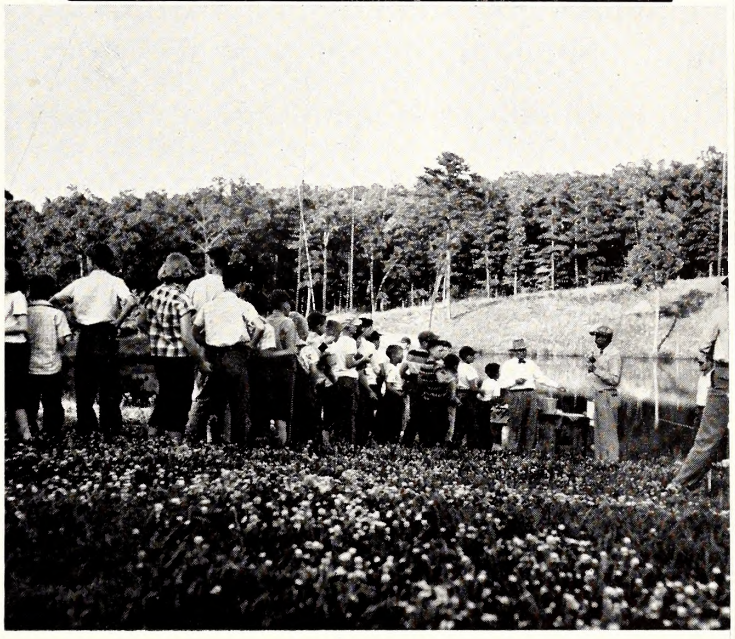
Youngsters in the vicinity of Asheb wo
when the Randolph County Wildlife onse
Lake.

Although youngsters are usually ca scio
much more interested in catching fi h ha
By sponsoring kid's fishing contests, Club
helping to create an interest in wildl g yo
teaching them sportsmanship and a iatio

(Photos Fis







SUMMERTIME"

a wonderful time a few weeks ago
onsored a fishing contest at Wrape's

scious, these young fishermen were
n having their pictures taken.
Clubs throughout North Carolina are
g youngsters and at the same time
iation for wildlife conservation.

et Fisler.)

NORTH CAROLINA WATERFOWL KILL

Including Kill Data for Primary Hunting Areas in North Carolina During the Past Three Hunting Seasons

By Stuart Critcher

Assistant Coordinator P-R Projects

NORTH AMERICAN waterfowl populations are a great renewable natural resource which must be carefully managed to insure the perpetuation of the resource. Sound management practices must be applied to insure this perpetuation, and these must, of necessity, be based upon facts.

Beginning during the waterfowl hunting season of 1947-48, an investigation of the general waterfowl situation in North Carolina was undertaken. In July 1948 this investigation became a part of the North Carolina Wildlife Resources Commission's Federal Aid Research Project on Marsh Resources. The information contained in this paper is a part of the findings that have resulted from this research project.

What species of waterfowl are killed in greatest abundance in North Carolina? The answer to this question could best be determined by making an actual check of numbers of hunters as they came in from the hunting grounds with their daily bag of ducks, geese, and coots. Therefore, one phase of the investigation was to make individual bag checks. This was accomplished by personal contacts, and by the use of questionnaires or record cards which were kept by individual hunters, guides, and others who cooperated with the investigation.

On Currituck Sound, which is one of the most important waterfowl areas in North Carolina, hunter-bag checks have been personally conducted by the author for the past three hunting seasons. During these periods a total of 1,327 hunters have been contacted, and these hunters have had in their bags a total of 6,071 waterfowl, including ducks, geese, and coots (locally called "blue-peters"). In 1947-48, 434 hunters were checked. They killed 1,570 birds, of which 892 were ducks, 98 were Canada geese, and 580 were coots. During the 1948-49 hunting season 470 hunters' bags were checked. These contained a total of 2,516 waterfowl, of which 897 were ducks, 174 were Canada geese, and 1,445 were coots. This past season, 1949-50, 473 hunters possessing 1,985 waterfowl were checked. Of these, 743 were ducks, 175 were Canada geese, and 1,067 were coots. For this three-year investigation on Currituck, the bag-check sample indicates that 41.71 per cent of the total waterfowl examined were ducks; 7.36 per cent were Canada geese; and 50.93 per cent were coots.

It is believed that this sample is sufficiently representative to conclude that the kill for all of Currituck Sound for the past three hunting seasons is in the same proportional percentages as shown in Figure 1.

During the 1948-49 season questionnaires requesting information on waterfowl-kill were distributed to guides in the Currituck area. From these questionnaires it was determined that a total of 2,333 waterfowl were killed by 554 hunters. Of this total 1,538 were ducks, 585 were coots, and 219 were Canada geese. Coots were not reported, however, on all of these questionnaires, thus the percentages which could be obtained from these data are not comparable with those given in Figure 1, and are therefore not included.

Information on the kill of waterfowl made on the Lake Mattamuskeet National Wildlife Refuge is obtained from individual daily records which are kept on the hunting permits. These data were kept and

	1947-1948		1948-1949		1949-1950		Grand Totals	
	Number	% Kill	Number	% Kill	Number	% Kill	Number	% Kill
Ducks	892	56.82	897	35.65	743	37.43	2,532	41.71
Geese	98	6.24	174	6.92	175	8.82	447	7.36
Coots	580	36.94	1,445	57.43	1,067	53.75	3,092	50.93
Totals	1,570	100.00	2,516	100.00	1,985	100.00	6,071	100.00

Figure 1. Numbers and percentages of ducks, geese, and coots checked in hunters' bags on Currituck Sound during the past three hunting seasons.

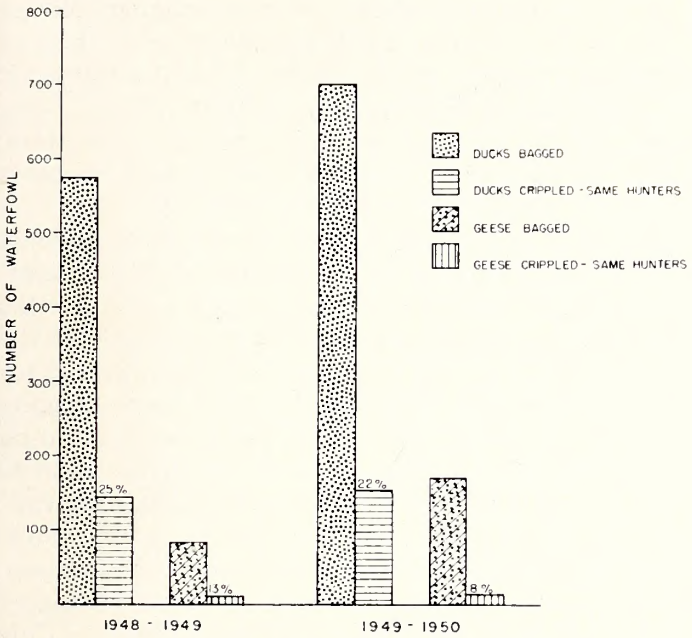


Figure 2. Relative numbers of waterfowl by species killed on Currituck Sound during the past three seasons as determined by bag checks of 1,327 hunters.

compiled by state and federal personnel who are in charge of hunting and other operations on the refuge. Lake Mattamuskeet is second only to Currituck Sound as a waterfowl hunting area in North Carolina, although more Canada geese are taken here each year than on any other area in the state. During the 1948-49 hunting season 2,057 birds were killed within the refuge area. Of this number 1,145 were ducks, and 912 were Canada geese. In 1949-50, hunters took 3,096 birds; 1,179 of which were ducks and 1,917 Canada geese. Many more geese are bagged in the fields surrounding the refuge than are killed within. In 1948-49 it has been estimated that an additional 4,000 Canadas were taken in the surrounding fields, and an additional 6,000 during this past hunting season. These are minimum estimates as no allowances have been made for crippling losses or geese taken illegally.

less than 1 per cent of the bag is made up of Canada geese. In the vicinity of Oregon Inlet in Dare County approximately 90 per cent of the total kill is composed of the various species of ducks. The remaining 10 per cent is Canada geese, as very few coots are taken. These percentages were determined from questionnaires, kept during the 1948-49 season, which showed a kill of 323 ducks and 36 Canada geese for 133 hunter-days. In the vicinity of Wilmington, near the mouth of the Cape Fear River, which was previously the rice-growing region of the state, ducks make up about 87 per cent of the total kill, geese 11 per cent, and coots about 2 per cent. These percentages were determined from questionnaires kept during the past two hunting seasons, which showed a total of 166 waterfowl; of which 144 were ducks, 18 geese, and 4 coots. This total represents the kill of 81 hunter-days.

During the three-year investigation on Currituck Sound the species which were killed in greatest numbers, in order of abundance, were: American coot, ruddy duck, baldpate, canvas-back, Canada goose, redhead, pintail, buffle-head, black duck, and ring-necked duck. Figure 2 graphically presents the numbers of waterfowl checked on Currituck Sound during the past three hunting seasons. During the past three years on the Lake Mattamuskeet Refuge Canada geese have composed the greater percentage of the total kill, followed, in order of abundance, by: the pintail, black duck, mallard, green-winged teal and baldpate. In the Core Sound area the scaups, mergansers, golden-eye, buffle-head, redhead, black duck and pintail, in that order, make up the majority of the kill. In the Oregon Inlet vicinity the pintail, black duck, lesser scaup, Canada goose, buffle-head and baldpate, in that order, compose the greater part of the hunters' bags. And in the Wilmington area, the black duck, Canada goose, green-winged teal, ring-necked duck, mallard, buffle-head and wood duck, in that order, as shown by questionnaires, make up the greater part of hunters' bags.

	1947-1948		1948-1949		1949-1950	
	Totals	Hunter-Success	Totals	Hunter-Success	Totals	Hunter-Success
Ducks	892	2.05	897	2.14	743	1.57
Geese	98	0.23	174	0.41	175	0.37
Coots	580	1.34	1,445	3.44	1,067	2.26
Hunters	434	.....	420	.....	473	.....

Figure 3. Average kill of waterfowl per hunter per day, expressed as hunter-success, on Currituck Sound, North Carolina, for the 1947-1948, 1948-1949, 1949-1950 hunting seasons.

As determined from questionnaires which have been kept by guides in the Core Sound area for the past two hunting seasons, ducks make up most of the total kill; only an occasional coot is taken; and

The next most logical question might be what has been the success of the average hunter on these hunting areas. This (hunter-success) is determined

by dividing the numbers of birds killed by the number of hunter-days; i.e., the number of hunters that bagged these birds during a daily hunting period. Figure 3 summarizes hunter-success on Currituck Sound for the past three hunting seasons, 1947-48 through 1949-50.

It will be noted that hunter-success figures decreased during the 1949-50 hunting season for all three types of waterfowl. Considering that both ducks and geese were present in good numbers on Currituck during the past season, this decrease in hunter-success may seem quite unlikely, especially for Canada geese, as the daily bag limit for geese was increased from one to two compared to the 1948-49 season; a decrease, however, did occur. Exceedingly mild weather which afforded poor hunting conditions undoubtedly is, at least, in part accountable.

On Lake Mattamuskeet hunter-success for ducks decreased this season, as compared with 1948-49, however, an increase was noted for Canada geese (Figure 4). The decrease in the hunter-success figure on ducks for this season can be explained rather simply: ducks were not as numerous this season as last. In that a noticeable increase in the goose population was observed this season, and in that the daily bag limit was increased from one to two, increased hunter-success for this species was expected. Unfavorably mild hunting weather, however, kept this increase to a minimum.

	1947-1948		1948-1949		1949-1950	
	Totals	Hunter-Success	Totals	Hunter-Success	Totals	Hunter-Success
Ducks	404	0.42	1,145	0.92	1,215	0.61
Geese	575	0.59	912	0.73	1,917	0.96
Hunters	973	.....	1,251	.....	1,987	.....

Figure 4. Waterfowl killed, hunters checked, and hunter-success on the Lake Mattamuskeet Wildlife Refuge during the 1947-1948, 1948-1949, and 1949-1950 hunting seasons, as determined from daily refuge permits.

In the Core Sound area hunter-success showed a very slight increase this year over last. The hunter bagged 1.8 ducks per day, as compared with 1.5 the previous season. For other areas the bag sample was not considered sufficiently large to determine the hunter-success.

Total waterfowl killed on Lake Mattamuskeet for the past two hunting seasons have already been given. This information was determined by a check of the daily hunting permits. Estimates are also given for geese killed in surrounding areas. For Currituck Sound and other uncontrolled public hunting areas, total kill has to be calculated in a different manner, in that there are no actual daily records available. The total waterfowl kill for Currituck Sound during the past three hunting seasons has been estimated in the following manner. During the 1947-48 season, 1,574 waterfowl were checked in hunters' bags at the Poplar Branch landing. It is estimated that 10 per cent of the birds that came through this landing were not checked. Therefore, this percentage is added to the number of birds actually checked. Complete checks were made on 17 of the 26 shooting days. Thus the total seasonal kill for this landing was calculated at 2,647 waterfowl. It is further estimated that the kill at this landing represents approximately one-sixth of the total kill for the Sound; therefore, the total kill for Currituck Sound was estimated to be approximately 15,882 waterfowl. Following the same calculating procedure, 2,516 birds checked during the 1948-49 season on 14 of the 26 shooting days, gave an estimated total kill of 30,834. In 1949-50, 1,985 waterfowl checked on 17 days of the 35-day open season, following the same procedure, gave an estimated total kill of 26,982 ducks, geese, and coots for Currituck Sound.

To determine the number of ducks and geese lost through crippling, each hunter or guide that was checked on Currituck Sound was asked personally how many birds were known to have been crippled, but not retrieved. This phase of the Currituck investigation was conducted during the past two hunting seasons. During the 1948-49 season 143 ducks were known to have been crippled by the hunters interviewed. These same hunters actually bagged 575 ducks. For 84 Canada geese bagged, 11 were lost crippled. This means that for every 100 ducks bagged, 25 were lost crippled, and for every 100 geese bagged, 13 are crippled and lost. During the past season (1949-50) the same check was made. The hunters interviewed bagged 701 ducks and lost 153; bagged 169 geese and lost 13. That is, for every 100 ducks bagged about 22 were lost; and for every 100 geese bagged almost 8 were crippled and lost (Figure 5). Although there was some slight reduction in loss this season, the numbers of waterfowl crippled is still far too great. And, too, the figures presented here are the known crippling loss, and the minimum estimate. The actual loss is undoubtedly much greater. The urgent need and necessity of the reduction of this unwarranted

waste of our waterfowl resources is great. Here is an opportunity for each waterfowl hunter to practice *active* conservation, by assuming personal responsibility in reducing the number of crippled and wasted ducks and geese.

Factual information is being contributed by many states, federal and private agencies and individuals on all phases of the waterfowl life equation. The composite summary of all of this information furnishes knowledge upon which current waterfowl management practices are based. In the business of managing wildlife, facts must prevail over fancy if the danger of bankrupting the resource by bungling the account is to be averted. The data presented here are offered as a part of the information which is necessary to complete the over-all picture of the trend in our continental waterfowl resources.

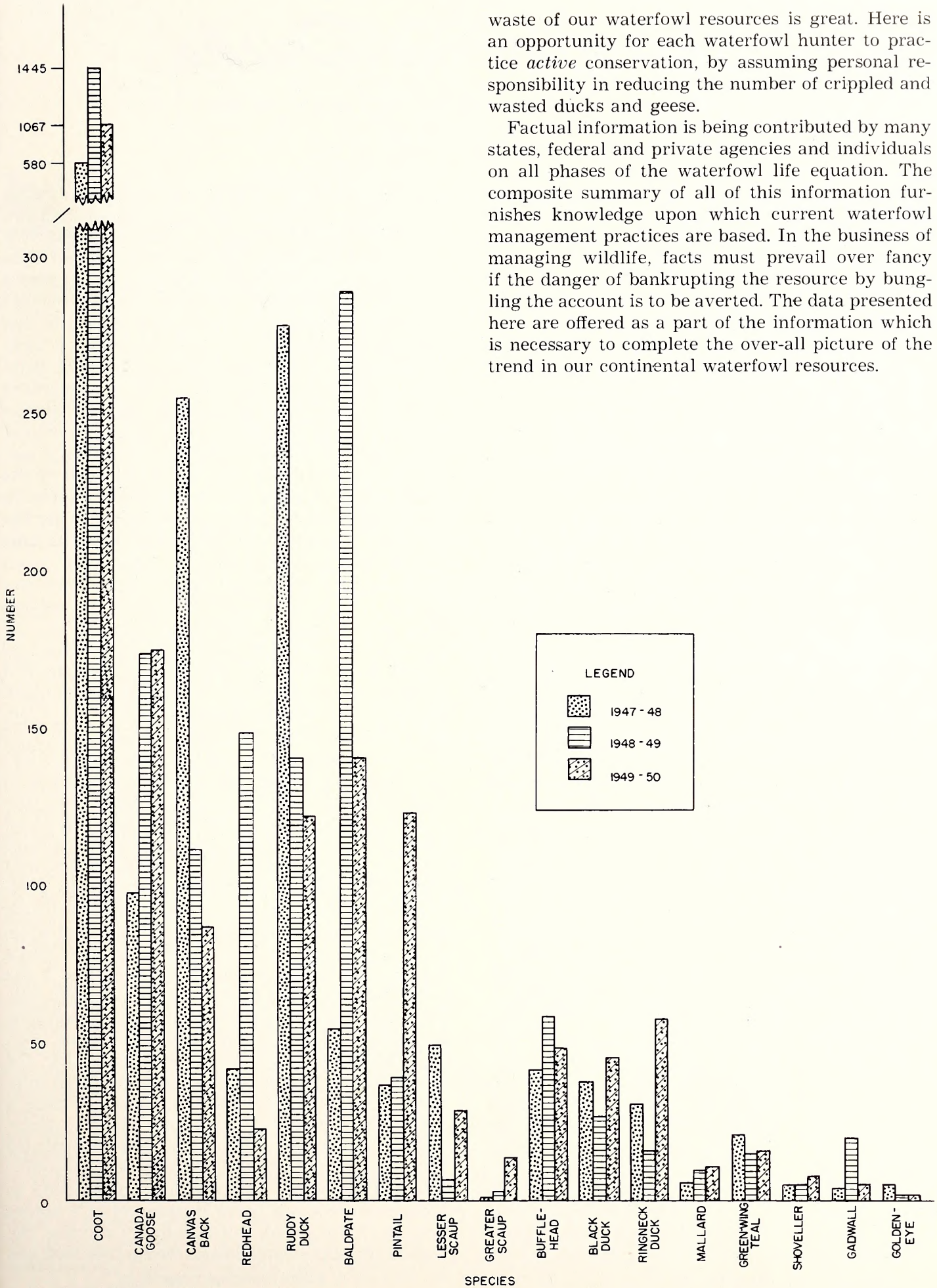
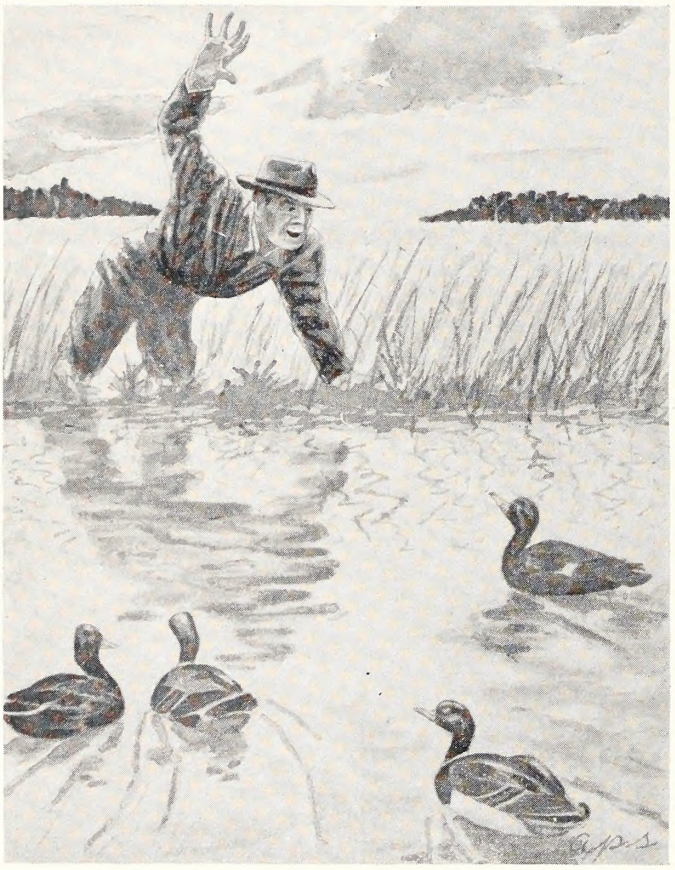


Figure 5.

The Curious Ducks

A Short Story About the Ducks that Didn't Get Shot

By KEN WILSON
Project Leader, Pittman-Robertson Projects



Arm-waving and owl hoots failed to scare the ducks away. They came closer to see what was going on.

CURIOSITY of one kind or another has doubtlessly killed many a cat. If not, where did the saying "curiosity killed a cat" get its beginning? This story, however, has nothing to do with cats. It's a tale about ducks. Curious ducks that never got shot. Nonetheless, the curiosity that killed the cat might easily have killed the ducks but the desire wasn't present. The perfect conditions that made these observations possible probably will not be experienced again as long as I live—that's why I am relating the story.

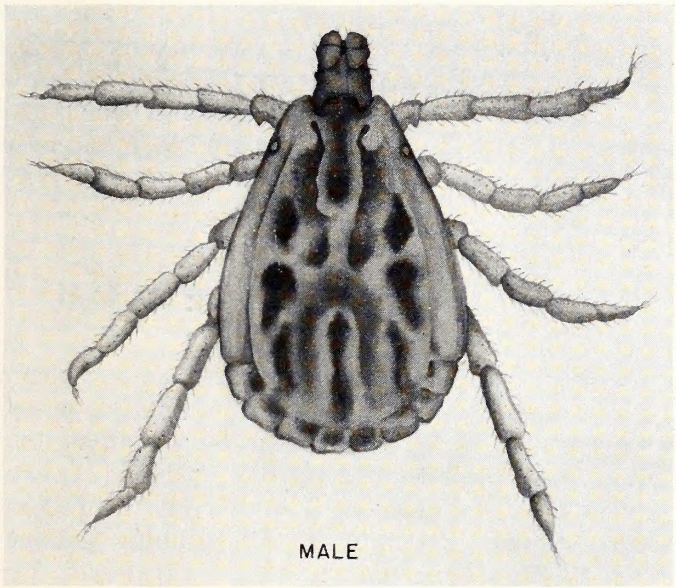
The afternoon of December 3, 1949, was a clear, cool day in Currituck County. The duck hunting season was almost three days old as I approached a small four-acre pond in marshland along the Northwest River. Distant shooting and the buzz of a Navy training plane broke the quiet. One hundred feet from the pond, I stopped. A wall of high grass vegetation prevented peering into the pond. The thought whisked through my mind, "No ducks"! My ponderous approach through the crunchy marsh vegetation would have certainly provoked flight. But listen! What was that? Suddenly, from the direction of the pond, peculiar chirpings and twitterings, reminiscent of the spring peepers annual choral fests, came to my ears. What could they be? Crouching on hands and knees, I crept closer, ten feet, thirty feet, sixty feet—Then I had a look. Ducks! Small ducks and big ducks! Scores of them! From my belly position in the marsh they appeared tiny to the eye but they were making the strange noises—of this I was certain. To get a better look, a real closeup, I commenced crawling in my best Indian style to the densely vegetated bank of the pond forty feet away. Halfway there I stopped in a small opening for a better look. Noise of my not so Indian-like approach had transformed the area into hushed silence. The snug forms of a dozen green-winged teal loomed up fifty feet away. Excited by now, I froze solid lest they see me and take flight. Five minutes slipped by. Twice, the whir of wings and the graceful landing of four relegged black ducks broke the silence. Then, flushed ducks or no flushed ducks, I made a creeping break for the shore. Nothing happened! My heart throbbed a thankful beat. From my ringside seat, I could see clearly what was going on. Most of the ducks had edged away from the area of disturbance to the wooded side of the pond. Six dainty teal continued their vigil forty feet away, paddling about effortlessly, glancing now and then at that strange form on the bank. For five minutes I maintained mouse-like quiet. Chirpings and twitterings gradually broke the silence again, two drake mallards quacked at each other in seeming debate and while this went on a whir of wings and six more black ducks joined the gathering. In the meantime, I was being watched. This time by 26 green-winged teal. Drakes and females in pairs, juveniles resembling females swimming in small groups or alone. Several teal, bolder or perhaps more curious than the others, approached to within thirty feet. Ten minutes passed and up to this time I had not made a move. Then suddenly I waved my arm in a jerky, stiff motion above my head. My audience exploded into the air, flew fifty feet, then dropped swoosh—splash! I had expected every duck in the pond to become alarmed and leave because when I waved my arm, I also yelled. But now to my surprise, the flushed teal were coming back for another look and

(Continued on page 20)

MORE ABOUT DEER DISEASE*

By B. F. Cox, B.S., D.V.M.
Veterinary Pathologist, N. C. Agricultural Experiment Station

Illustrations by Will Hon

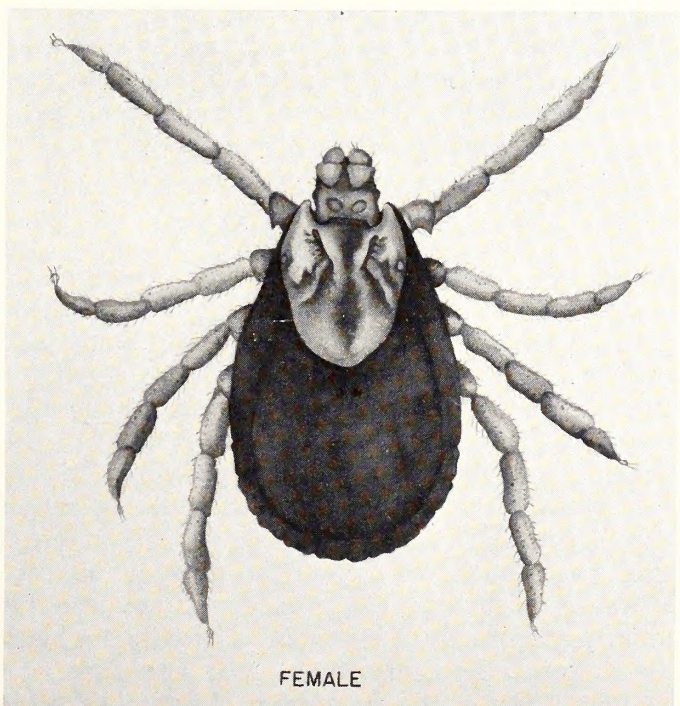


Wood ticks such as the ones shown here . . .

THE recent losses of large numbers of deer in North Carolina and other eastern states have caused considerable alarm among those interested in the conservation of wildlife.

Epizootics in deer in some sections of the state have been recorded for more than 40 years. Although the reports in most cases were very incomplete, there were certain characteristics of the outbreaks which were quite similar. There has been a general agreement on the description of the affected deer, by residents in the areas where outbreaks have occurred, even though these areas have been widely scattered and many years may have elapsed between epizootics. The condition has been commonly called "Black-tongue" which was based on the appearance of that organ after death. In all outbreaks the disease became apparent suddenly, caused a very high estimated mortality and gradually subsided with the advent of cold weather. These facts may be considered very significant in the light of later findings. The greatest incidence of the disease and the most severe losses were coincident with the heaviest infestation of ectoparasites. In this most recent outbreak deer were observed with large numbers of ticks or lice to the extent that many places on the skin were denuded of hair, by rubbing to relieve the irritation. Typical specimens which are representative of the condition responsible for the highest mortality are extremely difficult to obtain for postmortem and laboratory examination. They were either found in the advanced stages of decomposition or death had been due to natural causes. Postmortem examinations were performed by Dr. J. C. Osborne, Veterinary Pathologist, N. C. State, on some of the deer, which were received at the college, in a satisfactory condition.

Bacteriological cultures obtained from these specimens were varied. *Salmonella typhimurium* was identified from one case. This organism is known to produce fatal intestinal infections in all warm-blooded animals. A species of the *Proteus* group of organisms was isolated from another case. This organism is associated with gastro-enteritis in domestic animals and is frequently found in putrefying meat. One specimen found in a dying condition in the Roanoke River Swamp on October 5, 1949 was received approximately 12 hours after death. An organism was recovered from its heart blood which, when inoculated into guinea pig, produced death in 24 hours. Subsequent culture from the guinea pig revealed the presence of an organism identified as *Klebsiella paralytica*. This organism is carried by ticks and is reported to be the cause of a paralytic type of disease[1] in moose. Facilities were not available to conduct further studies on the pathogenicity of this organism.



. . . may carry the organisms which cause deer sickness.

1/Wallace, G. I., Cahn, A. R. and Thomas, L. J.: *Klebsiella Paralytica*, Journal of Infectious Diseases, 53, 1933, 386.

*A contribution from the N. C. Agricultural Experiment Station in cooperation with the North Carolina Wildlife Resources Commission, Pittman-Robertson Project 26-R. Published with the approval of the Director of the Agricultural Experiment Station as Paper No. 345 of the Journal Series.

The next deer to be examined were not received until after the epizootic had been terminated and were not considered typical examples of the disease. However, cultures were made from the deer and from ticks found on them. Ticks which were taken from sick or dead deer were also received from various locations in the state.

The deer did not show the typical characteristics of the disease and the organisms recovered from both deer and ticks were not considered as significant for the cause of death.

There have been certain marked resemblances observed between the disease which occurred in the deer of North Carolina and the disease of moose in Minnesota caused by the organism identical with those recovered from the single case here.

Both diseases are characterized by a seasonal periodicity which is coincident with infestation of adult ticks. Affected animals are found near water or in it. They are sick for only a short time and apparently struggle until exhausted before death. In each malady the activity of the animals has been described as aimless, walking in circles blindly, or in a dazed condition, with paralysis of the hindquarters. When found after death the heads were drawn far back over the shoulder.

The striking similarity between the epizootics reported in North Carolina over a period of years and the disease of moose in Minnesota suggest the possibility of a common causative agent. The isolation of *Klebsiella paralytica* from one case at the close of an outbreak does not necessarily indicate that this organism was responsible for the severe losses. However, this organism is closely related to the colon group of bacteria and may have been overlooked on that basis and considered as a contaminant without further identification.

It is hoped that in the event of another outbreak of this disease, fresh specimens and live ticks may be obtained for bacteriological examinations in an effort to establish a definite diagnosis.

(Continued from page 18)

others were following. During the next twenty minutes arm waving occurred a half dozen times along with owl hoots and just plain yelling. Sometimes they took alarm and flushed; sometimes they didn't. But they never left the pond. And after thirty minutes of such capers more than half of the 216 teal present were reviewing my presence thirty to fifty feet away in the pond. Up to this time not one of the bigger duck species had shown any interest. The hoot of a barred owl stirred up some interest, however, and three black ducks drifted into the area. By ten minutes everyone of twenty-six black ducks present was taking a look and three got within 25 feet of the mysterious object. Unlike the teal, arm waving and noise failed to cause much alarm. Short 60-foot flights occurred a few times but they usually took a passive view of the situation and swam away only to come back again for another look. Four woodducks, nine mallards and at least fifty of the teal, however, never got around to take a peek. Possibly they knew I was a phony, maybe they just weren't interested. Anyhow my best barred owl hoots and softest cooings failed to stir their curiosity and after ninety minutes of some mighty interesting watching, I left my ringside seat amid the precision and whir of many wings. No ducks killed, no pictures taken but my afternoon had been well spent. I learned that ducks, like cats, were curious.

Federal Judge Advocates Waterfowl Baiting:

A federal district judge, who has taken a solemn oath to uphold the laws of the United States, served as spokesman for a group of Maryland duck hunters who turned the recent waterfowl forum in Annapolis into an unprecedented attack on the federal migratory bird regulations, the Wildlife Management Institute reports.

In his statement, Judge William C. Coleman of Baltimore said that he favored the use of bait throughout Maryland, an open season of from 60 to 70 days, an increased bag limit, and shooting until sundown. He said that the District Attorney had come to his office a month or so ago with a long list of cases in which the baiting of duck blinds was charged and that he did not feel that they should be prosecuted. He characterized the baiting regulation as "an unenforceable law" and said that 95 per cent of the hunting in Maryland is done over bait.

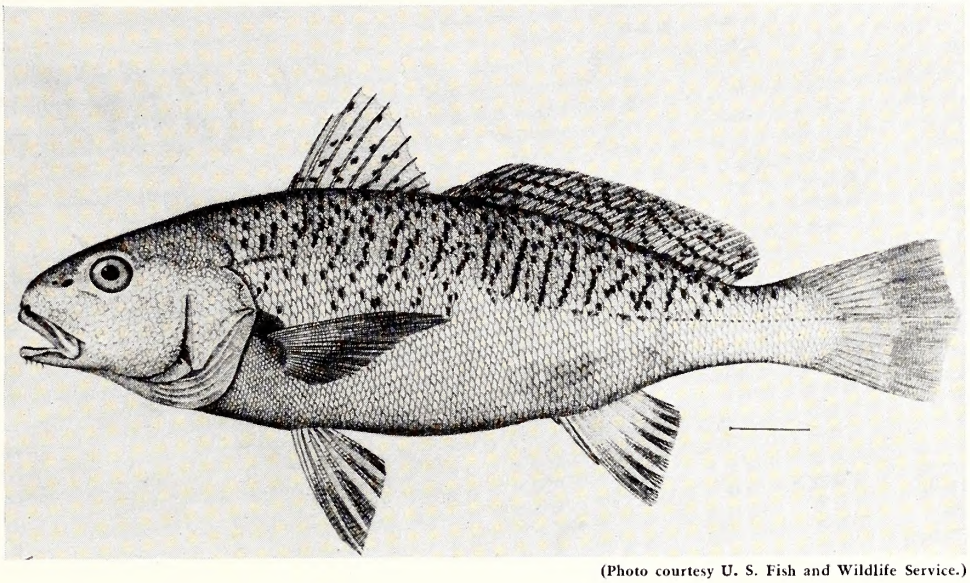
Dr. Clarence Cottam, assistant director of the U. S. Fish and Wildlife Service, who presided at the stormy session, replied that unrestricted hunting favored by Judge Coleman and others at the meeting would spell the end of waterfowl hunting and that the meeting was the most selfish of all those he had attended across the country. J. Hammond Brown, president of the Outdoor Writers' Association of America, in his newspaper column stated that there is little doubt that, if the federal authorities satisfied the demands made at the Annapolis meeting, most of the continent's waterfowl would be wiped out within 30 days.

After attacking the federal regulations which he is sworn to uphold, Judge Coleman turned to Dr. Cottam and asked what he intended to do about it. If baiting cases being brought to Judge Coleman by federal law enforcement agents are not being tried, as he stated at Annapolis, it would seem that the millions of law-abiding, tax-paying sportsmen in this country should have the right to ask Judge Coleman what *he* intends to do about it.

The Atlantic Croaker

By Lou S. Caine

Croakers are fun, and you can catch them when nothing else is biting



(Photo courtesy U. S. Fish and Wildlife Service.)

The "grunts" of the croaker may be heard under water.

Micropogon undulatus (Linnaeus)

If ever you are fishing quietly along the East or West coast, grunting over the poor fishing and suddenly discover the water grunting back at you, get ready for business.

That grunting is not your imagination but a school of croakers working below you. Their name is derived from this peculiar noise they produce either below or above the water. It can be heard for a considerable distance

NAMES—Chut, Grunter, Corvina, Hardhead, Crocus, Roncodina and Ronco.

CHARACTERISTICS—In addition to the grunting characteristic, the croaker can be distinguished by the following markings: brassy above, shading off into lighter colors below. The middle of body has short, irregular, dusky vertical bars crossing the lateral line. Dark brown spots irregularly cover the back.

RANGE—From Cape Cod to Florida, also in the Gulf of Mexico. The Atlantic Croaker is plentiful around the North Carolina coast and many are taken in Chesapeake Bay.

Croakers are taken well out in the surf, beyond the line of breakers and also in protected waters such as inlets, bays and lagoons. The depth of water varies from 8 to 100 feet.

SIZE—The average size is from 1 to 2 pounds in most areas, and occasionally 2 to 6 pounds in others. There is no official world record but the largest size is approximately 8 pounds.

FLAVOR—Excellent.

FOODS—Crabs, shrimp, clams, squid, worms and minnows.

LURES—Good artificial lures like the River Runt hold no fascination for the croaker for it seems to yield only to live bait.

METHODS—Surf casting and still-fishing.

TACKLE—For the best sport, light tackle should be used. In surf casting the regulation outfit is satisfactory.

For still-fishing inlets, bays and lagoons, the "Pal" tubular steel rod in 5 foot length, medium action is ideal. If a heavier rod is needed the "Pal" in stiff action or the "Riptide" split-bamboo rod is excellent.

To completely cover the subject, there are two other members of the croaker family which merit identification, both of these are most numerous in the Pacific.

One, the yellow-fin croaker, *Umbrina roncador,* is also called yellow-finned roncador. It averages about the same size as the Atlantic croaker.

The other, the spot-fin croaker, *Roncador stearnsi,* is found in the same range as the yellow-fin, from San Francisco southward. It averages from 3 to 4 pounds and sometimes reaches 15 pounds. Both of these fish have been reported taken in Chesapeake Bay.

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

WE have often talked about the sportsmen's responsibility toward their wildlife resources and the program to perpetuate and increase their hunting and fishing. Quite often, we feel, there is an air of disbelief or confusion about this matter of responsibility. Some folks seem to think that the only requirement for a full game bag or creel is some sort of a new-fangled machine, some money to feed into it and someone to turn the crank. . . . With the combination of these ingredients, the result should be neatly packaged bundles of quail, rabbits, turkey, deer, and other game popping out of the gadget ready for mailing to a favorite hunting spot. Of course, many of us know that production of this sort of volume capable of meeting our needs is impossible. Hence the need for a great number of people to join forces in a responsibility sharing effort. If the wildlife resources of North Carolina belong to the people of North Carolina—and they do—then we alone can make our hunting and fishing what we want them to be. It is our responsibility to obey the rules of the game as well as to help the enforcement officer in the performance of his duties. He is one of the most valuable friends we have—he protects our interests in our share of the game and fish crop. How efficiently he works depends on *how strongly we desire to see him do a good job.*

Merely wishing for game and fish will not produce it—the wish is only the spark than can light the fuse. Our responsibility to our sport is real and increasing, and certainly no one can deny the responsibility that is ours to hand the wonderful sports of hunting and fishing over to those who come after us in an improved, rather than a poorer condition.—W.D.

Mr. A. E. B. of Leland, N. C., is the first to come up with a question which appears each spring. His letter, quoted below, is self-explanatory:

"Recently a friend, to whom I had given eleven nice "goggle-eye" perch, informed me that he had discovered worms in the fish.

"Still more recently, while cleaning a mess for myself, I noticed a red streak in the flesh on the inside of the fish, and upon cutting into the flesh discovered a worm about the diameter of a hairpin and about three inches long. A more thorough examination of the fish revealed about six or eight more of these worms, most of which were coiled like a spring in the flesh, the only sign of their presence being a reddish spot about one-quarter inch in diameter.

"Having heard rumors of worms in fresh water fish before I discovered them for myself, I would appreciate any information you might offer as to what species they infest, why, etc.

"I enjoy "Wildlife In North Carolina" very much."

Mr. Cornell, Chief of our Fish Division, believes the parasites described to be the red roundworm, although specimens are needed to make positive identification. These parasites infest bass, sunfishes, perch, and other fresh water species. While their appearance in a nice mess of fish tends to remove all desire for a fish dinner, they can be removed and the fish can be eaten after proper cooking.

Mr. R. E. S. of Candler, N. C., asks, "For several years we have had problems in connection with trout fishing. We buy licenses and then are charged fees by landowners when we fish the streams running through their land. These streams are stocked by the Wildlife Commission and signs are posted saying that the stream was stocked and giving the dates of the seasons. Can we fish these streams without paying the landowner?"

The Wildlife Resources Commission follows the policy of stocking only those waters where the public may have access to the stream. An effort is made

before the fish are stocked to determine that the water of a particular stream will be made available to the public, but in some instances a landowner has prohibited fishing after the stream was stocked. In such instances that particular stream was removed from the list of those eligible to receive fish.

Mr. J. R. S. of Halifax, N. C. asks, "For a while I carried a .22 rifle along with my shotgun, this came in handy for still shots and for killing or dislodging game stopped by shots. Now please advise if it would be against the law to carry a .22 pistol along with my shotgun when it is legally owned and not concealed. . . ."

Under the conditions described by the writer, there is no prohibition against carrying a pistol while hunting.

Mr. J. B. R. of Rockingham, N. C. asks, "What is the best way to get rid of skunk odor on clothes, small boys and dogs?"

Washing several times with Green's liquid soap has been a popular remedy for many years. Also I have heard that washing with canned tomatoes is effective. From there on the remedies go to burning, burying, and like measures, but how these could be carried out on small boys and dogs is another problem. Anybody have any sure-fire ideas?

Early Bird?

Game Protector N. B. Hughes of Northampton County reports that Chief of Police Wheeler of Jackson saw a hen quail with a full brood of chicks on April 10. I wonder if anyone knows of an earlier brood? We should send a basket of worms to that ambitious mama.

"Best darn' tree dog I have ever owned."

Yes, the 19 pound, 41 inch muskellunge shown above was caught in North Carolina! Mrs. Doris Lambdin of St. Petersburg, Florida, is shown with the beautiful brute which she caught on a 15 pound casting line and an 8 pound leader while fishing at the mouth of Twenty Mile Creek, Cheoah Lake, near Fontana Village, N. C. This is the first of these fine game fish on record coming from the TVA reservoirs. The story was sent in by Fish and Game Protector C. L. Garland of Graham County. Photo by Vivienne Roberts.

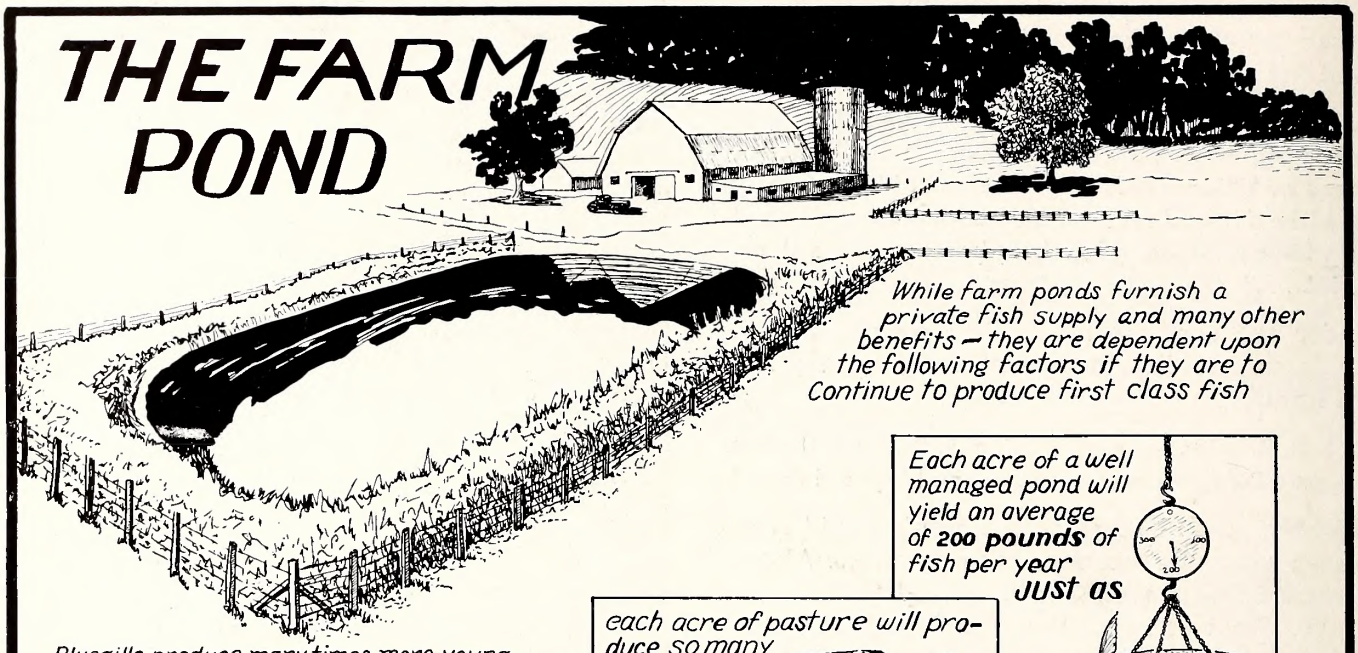
(Photo courtesy Nebraska State Game Commission.)

Above is what happens when bombs are set off in a crow roost. The birds shown here were killed by the blast which was shown on page 7. Crow bombing should be done only where crows are so numerous as to do heavy damage to crops and wildlife. Crow bombing in North Carolina is illegal without special permission from the Wildlife Resources Commission.

FISH FOR *YOUR* NEEDS
NOT FOR THE NEIGHBORHOOD

FISHING HELPS—NOT HARMS . . .

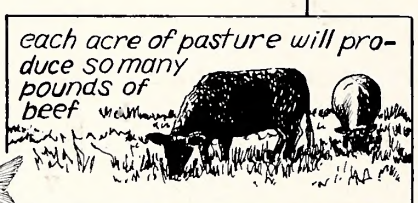
THE FARM POND



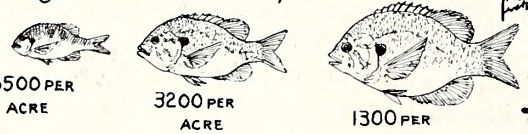
While farm ponds furnish a private fish supply and many other benefits — they are dependent upon the following factors if they are to Continue to produce first class fish

Each acre of a well managed pond will yield an average of **200 pounds** of fish per year **JUST AS**

each acre of pasture will produce so many pounds of beef



Bluegills produce many times more young each year than bass do — an overpopulation of bluegills often occurs in ponds



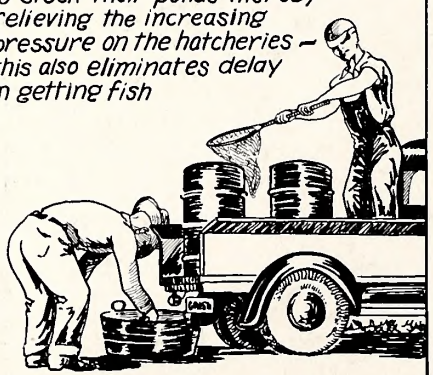
Effects on bluegills of the same age

THE GREATEST FARM POND MANAGEMENT PROBLEM IS AN OVERSUPPLY OF FISH!

Succested control measures

Public fishing brings revenue and helps to keep the pond in balance

Use the excess fish to help others to stock their ponds thereby relieving the increasing pressure on the hatcheries — this also eliminates delay in getting fish



Surplus fish MUST be removed if your pond is to be kept in balance

Three pounds of sunfish should be taken out for every pound of bass

Win Donat

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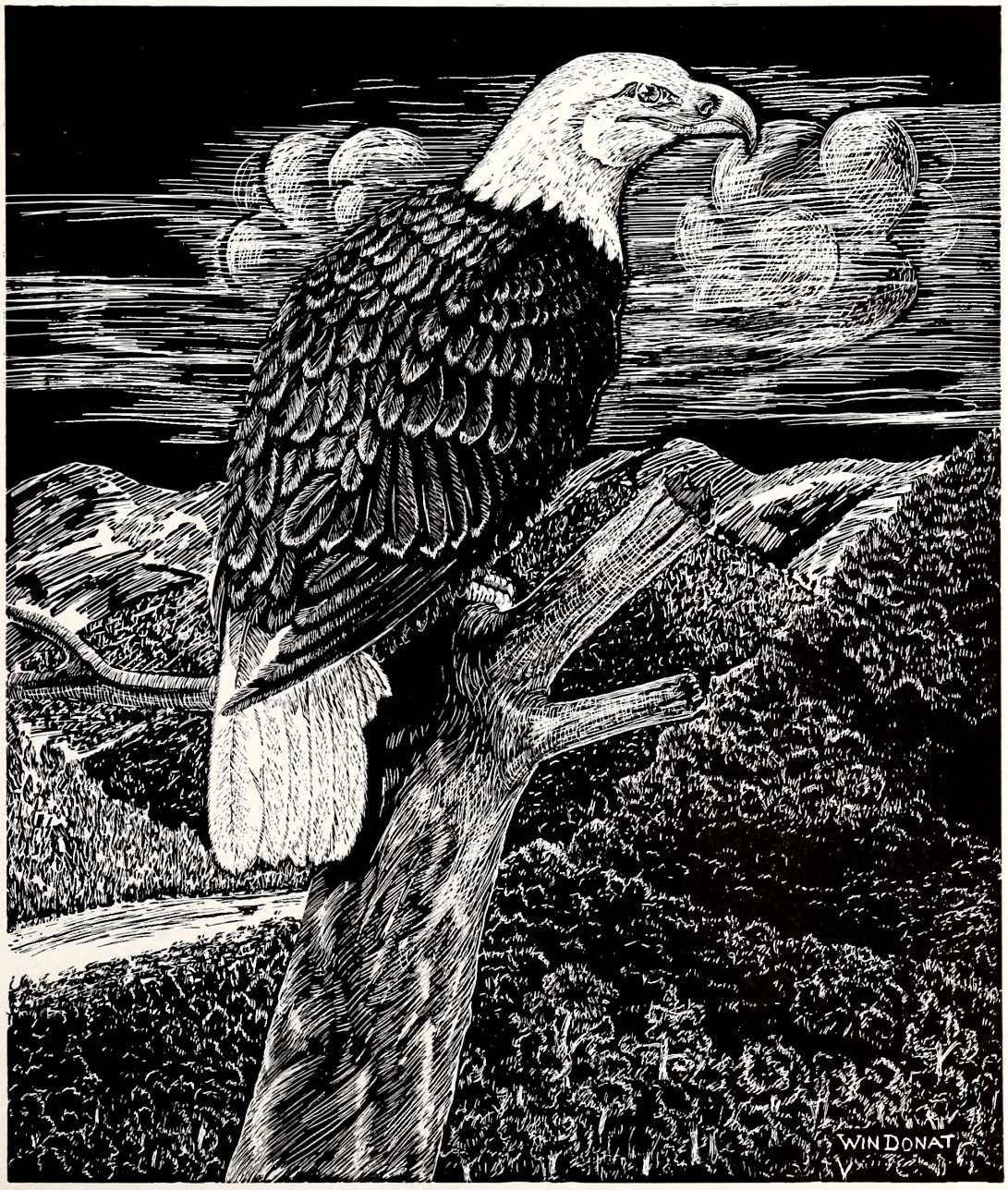
IN NORTH CAROLINA



TEN CENTS AUGUST 1950

Lennon's Marsh, located near Lumberton, is the location of the only White Ibis rookery in North Carolina. At left are White Ibis in a pine tree.

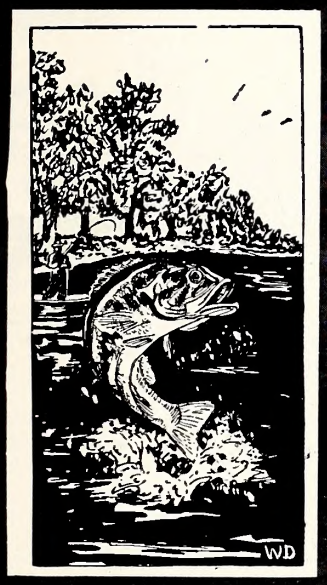
(Photos By Margaret Fisler)

Here are the nest and eggs of the White Ibis. When the eggs hatched, the young birds were banded.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



STATE OF NORTH CAROLINA

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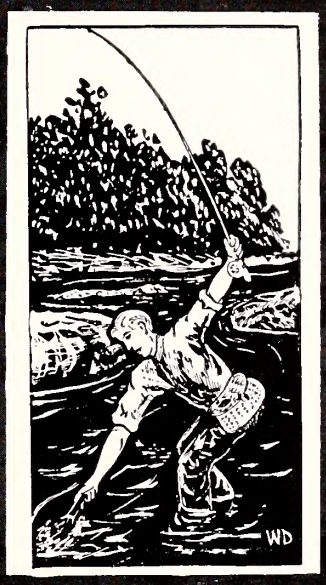

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August 1950 Vol. XIV, No. 8

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
GLORIA MOORE, Circulation
JACK DERMID, Photography

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COVER

The bald eagle depicted on this month's cover was done by the "scratchboard" medium. Eagles are protected by State and Federal law.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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LET'S LEARN ABOUT OUR WILDLIFE

The Nineteenth of a Series on The Wildlife Species of North Carolina

The playful antics of otters sometimes give rise to tales of huge water snakes. Cover lower half of picture to see how such stories arise.

THE CAROLINA OTTER

By ROD AMUNDSON

History

LIKE other water-loving furbearers such as the beaver, the mink, and the muskrat, otters have played an important part in the development of America. They did not play the role to the extent beavers did, for example, but otters were sought after eagerly by early day trappers, and these trappers spearheaded the westward push of civilization.

Because of the superior quality of their furs, otters have always brought high prices in the fur market. And because of the high prices paid for furs, otters became almost extinct.

Not many years ago otters were extremely rare in North Carolina. It is pleasing to report that these beautiful, valuable, and fascinatingly interesting animals, under strict protection by law, have become sufficiently numerous in the eastern part of the state to warrant an open season for trapping.

Careful protection and a reasonable harvest of furs will insure the continued existence of otters in North Carolina, and profit in the pockets of trappers.

Range

Otters once ranged through almost all of North America, but in many large regions they have disappeared. Perhaps the most numerous species is the Canadian otter (*Lutra canadensis*) which exist throughout most of Canada. The Canadian variety is a little larger than the typical North Carolina subspecies (*Lutra canadensis laxatina*) and the furs are generally more valuable.

Otters extend southward to Florida and other Gulf states, and subspecies occur clear down to Central America. Their northward range extends as far north as winter temperatures will permit. West of Warren, Franklin, Wake, Chatham, Randolph, Montgomery, and Anson Counties in North Carolina, otters are not abundant enough to allow trapping.

Characteristics

One cannot observe and study otters without falling in love with them. In the first place, they are among the most beautiful and graceful of mammals, with their gleaming fur, intelligent features, and the long grace of their bodies. In addition to comliness, otters are intelligent, playful, and almost without sin. The only thing that can be said against them is that they compete with fishermen for game fish, and on very rare occasions take waterfowl and poultry.

Otters enjoy the sport of taking "belly-whammers" down steep slides into the water.

The Carolina otter is the largest resident member of the weasel family, with fullgrown males reaching a length of 40 to 45 inches, and a weight of about 20 pounds. The body is elongated, like that of the mink, with a long, slender neck and a long, thick, powerfully-muscled tail. The feet are webbed, both fore and hind. These, together with powerful leg muscles and the tail, equip the otter for his amazing ability as a swimmer.

The general color is a rich glossy, dark brown, with lighter hues along the head and neck. Sexes are colored alike, and there is no marked seasonal variation in color, The fur, like other water-loving furbearers, is composed of two layers, a dense, thick undercoat, with long, glossy guard hairs.

The ears are small, close-set, and almost invisible from a distance. The eyes are small, black, and beady in appearance.

Food Habits

We have said that the otter is an amazing swimmer. Otters are perfectly capable of out-swimming a trout in its native habitat, although most observers contend that otters catch fish more by stealth than by speed. Since they can stay under water three or four minutes, they have ample time to stalk and seize their prey. W. P. Lett, in his book entitled *The Canadian Otter,* writes, ". . . It approaches its intended victim from behind with great caution. It stretches itself at full length, as when sliding, and with its short front paws, paddles itself slowly and stealthily along, with its body perfectly motionless, no movement being perceptible but the gentle action of its short forelegs. When within about 18 inches of its unsuspecting quarry, the pursuer arches up its back, like the bending of a bow, and, with the speed of an arrow, darts upon its victim, seldom failing to seize and secure it at the first plunge. Should it fail in the first attempt, providing the water is clear, the chase is continued, very generally with success . . ."

The diet of otters is composed almost entirely of fish. They are accused of competing with fishermen for fish, but their diet by no means consists entirely of game fish. They will take eels, suckers, branch roaches, or whatever species is most convenient to capture. In addition to fish, otters take shellfish, crayfish, and, rarely, frogs. Sometimes they may take young muskrats, small birds, waterfowl and poultry. Such items, however, are the exception rather than the rule.

Unlike their close relatives, the mink and weasel, otters rarely kill more than they can eat. Sometimes parts of large fish will be left to waste, but usually otters take smaller fish and eat them entirely.

Breeding Habits

Where male mink are promiscuous wanderers, seeking mates where they can be found, otters tend to pair off; some believe that the mating is for life. Otters prefer to make their homes in bank dens. These may be excavated by the animals themselves, with under water openings and large nest cavities warm and dry above the water line. If muskrat dens are available, otters will use them. Occasionally a pair of otters will set up housekeeping in the base of a hollow tree or a hollow cavity in a fallen tree. Invariably otters make their homes adjacent to water, and spend their entire lives in or near water, except for occasional portages across dry land to the nearest pool or stream.

Mating occurs in January or February, and from one to three young are born about two months later. The young are well developed at birth, al-

Photo Courtesy U. S. Fish and Wildlife Service

Note the webbed feet and the heavy muscular tail.

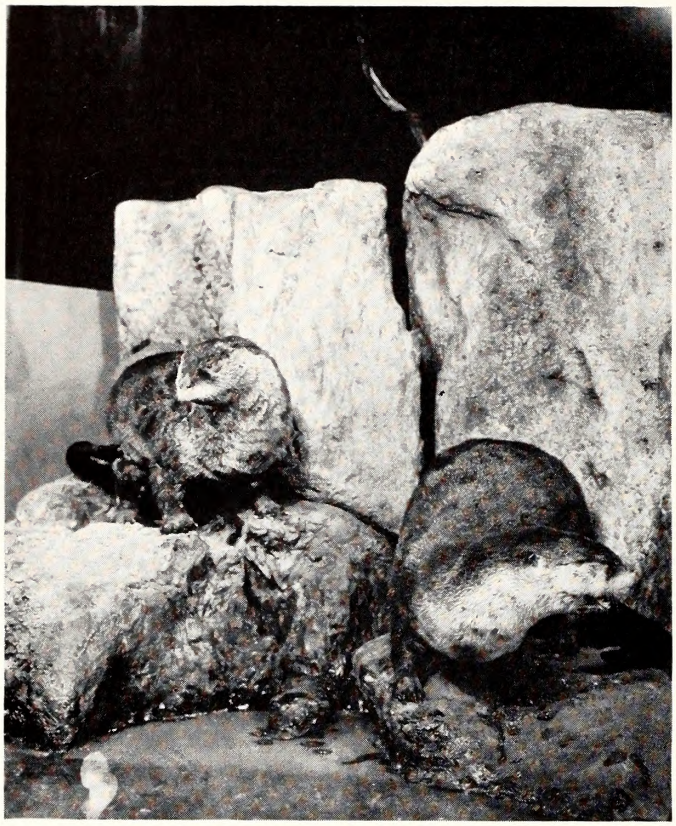


Photo Courtesy American Museum of Natural History

The fur of otters is waterproof and very valuable to the fur market.

though like kittens, their first few days of breathing life are sightless.

The young of almost all mammals are considered "cute", but anyone who has seen a couple of young otters playing together will insist that they are by far the most lovable juvenile mammals. Family life is supervised by the mother otter, although the males may help out with feeding and join in with family fun.

Mother otters offer food to their youngsters in the form of wriggling fish long before they are capable of taking solid food, and a taste for fresh fish is acquired early in life.

The family may remain together as a group until the young are nearly full grown.

General Behavior

Although not gregarious in the sense that prairie dogs or elk are, otters do have social get-togethers, and seem to enjoy each other's company. Usually these gatherings are accompanied by one of the most delightful and amazing activities known to the mammal world. The young of almost all mammals spend considerable time playing, but otters are probably the only group wherein young and old alike engage in sport.

Otters select a steep slope overlooking a pool of deep water. They remove grass, moss, sticks, stone, or any other material which may interfere with making a smooth pathway from the brink of the slope to the water. Then they take turn about sliding down the slope on their bellies, with the front feet folded back and the hind legs extending backwards. After a few trips water from their wet hair makes the slide a greasy, slippery chute. The animals dash up the steep slope with considerable expenditure of energy for the sheer pleasure of sliding down again. Although groups of otters usually do not exceed four or five in number, eight or more may get together for the sport of sliding.

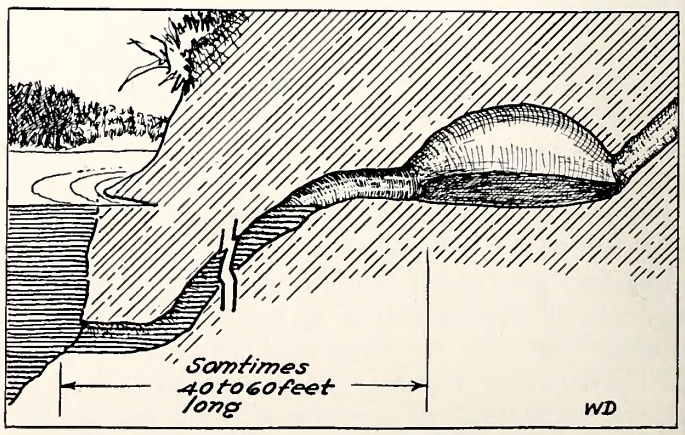
Otters like to swim and play about on the surface of the water. They have been observed playing "follow the leader" on the water. At this time they use an under-over action somewhat in the manner of porpoise. From time to time the leader of the troup may stop, rear eight inches of his neck out of the water to look for possible danger. No wonder there have been reports of huge snakes cavorting in a lake or river! The undulating motion of a file of otters, the lead animal with his long neck out of the water, would certainly resemble some gigantic serpent.

In addition to their beauty, their intelligence, swimming ability and love of fun, otters have well-developed vocal talent to make them more interesting. When alarmed, they give forth sharp, high-pitched chirps or low, chattering growls and snarls. They grunt contentedly like pigs or give vent to hissing, sniffling snorts. Pets whimper and cry at the loss of the mate. The most astonishing voice is a piercing shriek that can be heard for miles, like the scream of an eagle.

As Pets

Otters make the most affectionate and lovable pets. A pair at a wild animal farm in Florida (probably Florida otters) are the delight of tourists and customers who come by to see or purchase wild animals. The otters greet each arriving automobile, and if windows are left open, will make a thorough investigation of the contents and occupants of the car.

Seton reports that otters in captivity prefer fresh



The dens of otters may be from 40 to 60 feet long with an underwater opening, and the nest above the water line.

fish, just as wild ones do, but ate cooked fish, bread and milk, meat, and potatoes.

The sanitary habits of otters in captivity are immaculate and fastidious. They select an odd corner of their cage or pen for a latrine, and use it unfailingly.

The love for affection in pet otters is touching. They love to be fondled and petted. If there are two or more, those not being petted will beg for attention, with no display of jealousy among them as would be the case with puppies or dogs.

Old otters tend to become grouchy and even vicious, but in general otters are delightful pets and companions. No dog is a match for an otter in a fight in water, and few dogs can whip a full grown otter on the ground. They are gritty, fast, clever, vicious fighters, and household dogs and cats soon learn to respect them and join in their playful games.

Management

As long as plenty of water and fish are available, together with a moderate amount of wilderness area, there is no danger of otters becoming extinct. Strict legal protection and judicious harvesting of furs will assure North Carolina a continued population of these valuable and delightful animals.

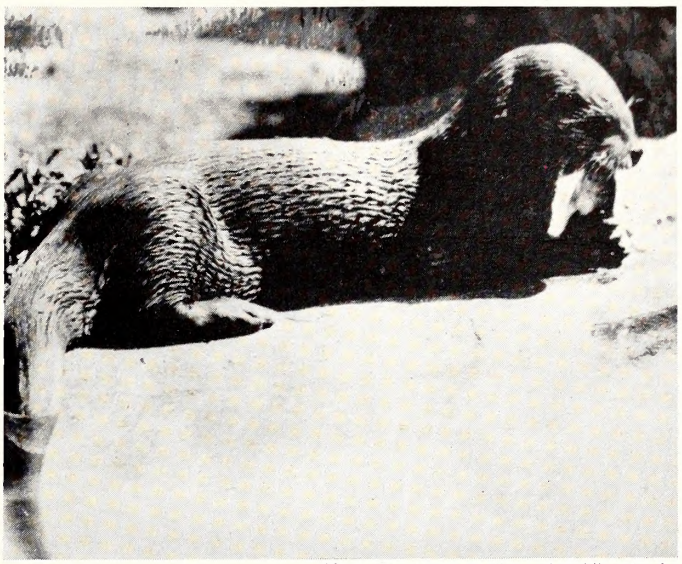


Photo Courtesy U. S. Fish and Wildlife Service

Otters are fond of fish. Here is one eating a small shad.

OUTDOOR NOTES

By JOE AUSTELL SMALL

Wild Ducks Can't Fly

Drake ducks are grounded for about a month each year. This period comes during the eclipse moult, at which time male ducks shed their feathers and are unable to fly. After being nude for a time, the old man goes into disguise. He grows new feathers like those of the female. This stage is called the eclipse plummage. He masquarades as a female for another month, and then sheds all feathers except his wing feathers. Then, taking on his natural look, he grows feathers which he keeps until the following year. At that time he again goes through the same routine. It is during this period of time, when drake ducks are unable to fly, that a great many of them fall victim to predators.

Snake Folklore

Many popular beliefs about snakes which have come down through the years are untrue. It is widely believed, but untrue, that snakes are slimy, that the killing of a snake will be avenged by its mate, that the age of a rattlesnake can be determined by the number of rattles, that all snakes are poisonous, that they sting by their tongue or tail, that snakes charm their prey, that whiskey is a cure or aid for snake bite, and that snake bites will not affect pregnant women.

Owl Fishing

A man went fishing on the Neches River near Palestine, Texas. He attempted to cast his live minnow over a low limb, but instead his line hit the limb. A huge owl swooped out of a tree, grabbed the minnow and hook, and flew off with bait, line and rod. He just didn't give a hoot!

Reel Tool

A fish hook is a necessity on a fishing trip but it can also be the ruination of that trip. A hook rammed into a person's hand can be dangerous. Unless you have the right equipment, a trip to the doctor is often necessary to have it removed. Trying to get it out with the wrong equipment can cause much unnecessary pain and usually does more harm than good.

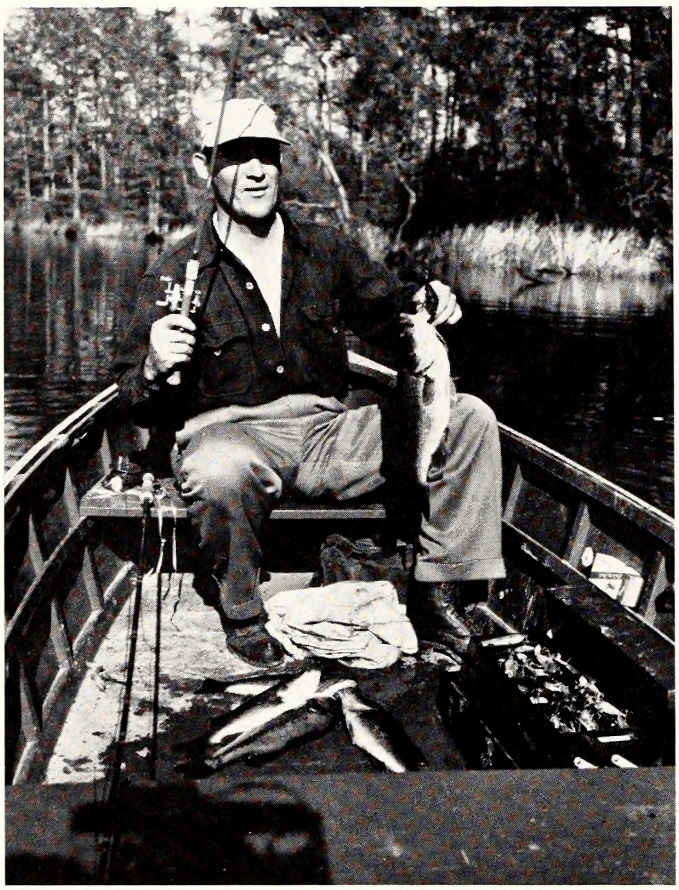
The American Guides Association recommends that every fisherman carry a pair of Benard Fisherman's Pliers. These make the removal of a fish hook simple. They will also come in handy for a dozen other uses. They cut wire, squeeze sinkers, and fit nearly all nuts found on reels and small parts of motors. They are constructed of nickel plated steel to outlast wear and weather. It is possible to exert a ton of pressure with their vise action grip. And—not the least attraction is the cost—$2.00. A check or money order sent to Sargent and Company, 8 Water Street, New Haven, Connecticut, will bring you one of the most valuable additions you've ever had to that old tackle box.

FISH *Harder* MEN!

This Article May Raise Your Eyebrows —And It Might Open Your Eyes

(Reprinted through the courtesy of the author and TRUE Magazine)

By HAROLD TITUS



Bass like this can be produced only when a lake or pond is well balanced.

SO it's a long, long time between bites? And you think the darned lake is pretty nearly fished out? Certainly it's worse, you say, each year. There was a time when a man could take a string of fighting largemouth bass or a mess of big bluegills out of that water every trip, but now the fishing is down to practically nothing. And damn it, you pay license money that goes into conservation; why doesn't the state stock the lake, or shorten the season to give the fish a chance, or something . . . ?

Brother, if you're in that fix—as so many lake-and-pond fishermen are, over certain broad stretches of the United States—the thing to do may be to get together with your friends and yell loudly till you get a longer season, smaller legal sizes, bigger catch allowance, and no more stocking with hatchery fry. Then, if you and your friends fish hard and often, pretty soon the fishing will get good again. Like old times . . . lots of big lunkers waiting to grab the hook.

Sounds crazy, doesn't it? In most fishermen's opinion, if it wasn't criminal it would be downright fool's talk to claim that by taking more fish, you'll have more to take.

The astonishing retort today—and from the best scientific authorities—is that it is difficult to *overfish* or fish out a lake; on the contrary, most bad fishing results from *underfishing*. This revolutionary concept has been tested and proved.

It is time for the fisherman to do his share in ushering in the new era of sport. His job is to catch more fish.

This challenging assignment is based on the new knowledge of spawning rates, food habits and growth of the warm-water fishes such as bass and bluegills and crappie. These are the favorite catch of the majority of our country's fishermen. They inhabit the warm waters of a wide, populous zone that spreads north from the Gulf of Mexico to the edge of New England and west with a few skips and jumps into the prairies, reappearing beyond the Rockies on the Pacific Coast. Therefore, the "fish harder" command cannot be directed as yet to those

Pan fish such as these crappies must be heavily fished to make fishing better.

Trout streams in North Carolina are unable to supply sufficient fishing by natural reproduction.

anglers who seek the cold-water species such as the pikes and muskies, about which there is still much to be learned; nor to fishers for trout, which present special problems and still require hatcheries and legal-limit protection. Nor do the parties who overcrowd an occasional heavily fished small lake or pond need any further urging.

The changed idea about how to make fishing better in average warm waters is a product of the last dozen years, although conservation programs have existed for half a century. Since the 1870s we had tied our first hopes of maintaining the fish population to hatchery development. Since around 1900 we had narrowed our angling seasons to give fishermen a more equal chance at what fish were available. The belief that these two plans were all that could be done became so firmly fixed that we demanded more and more of the same, despite the fact that time between bites kept increasing in most localities. So much of the money we raised by sale of fishing licenses went into hatchery expansion and law enforcement that we had practically nothing left for scientific investigations which might have shown what we were getting or weren't getting for our cash.

But shortly after the first World War the realization began to dawn on a number of fishery administrators that something was wrong. Fishing simply was going to pot in too many places.

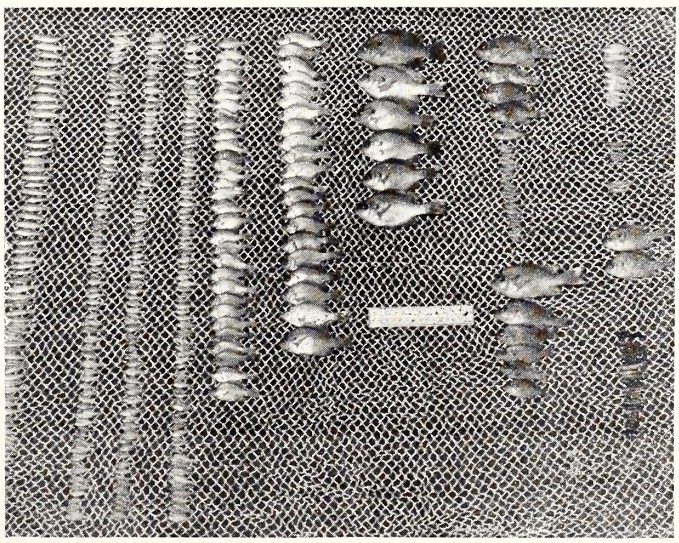
Nobody knew why, and furthermore nobody knew just how to find out why. So in New York, Michigan, Illinois and a few other states, the colleges and universities were called on for technical help. Since way back, farmers had been going to trained specialists with problems of animal and poultry husbandry. Perhaps the same approach would solve fishery troubles The professors started doing their stuff; they began to accumulate facts and to train biological investigators in courses on fish management.

One of the first moves of the pioneer researchers was to work out ways to take inventory of fish on hand. That is a basic necessity in planning any production, most of us now realize, but nobody had ever tried to do a thorough job of it before. You can't rely on anglers' catches for accurate information. You can set nets until you're red in the face and not get complete answers. So the boys went to work draining lakes. Where such practice was difficult or impossible, they developed a system of poisoning waters.

This last is spectacular. They don't tell you what they use, but, brother, it's potent stuff. Scatter a few pounds of it per acre over the surface, and fish float belly up within minutes. In a few hours every living specimen, down to the last tenacious "rough" fish, will be dead, ready to be picked up, counted, weighed and otherwise made to contribute essential information. And in a few days the effects of the treatment have worn off and your water is as safe as ever, so populations can be re-established without delay.

What was discovered by these inventories would bulge your optics. Fish by the ton were recovered from waters reputedly fished out. The most cock-eyed mixtures of species were revealed, the result of years of desperate, by-guess-and-by-gosh attempts by hatchery crews to start something that would do somebody some good. Too much food, too little food, the wrong sorts of food—all came to light to help explain why orthodox conservation measures had failed.

Down in Alabama, H. S. Swingle and E. V. Smith, working for the state's Polytechnic Institute, found a significant condition in pond after pond that once



Here is an example of the prolificacy of pan fish. Note the abundance of small fish in this group.

Largemouth bass will hit surface baits only when they are hungry. Well fed fish seldom take artificial lures.

had afforded good fishing for bluegills and largemouth bass. The ponds were now so over-stocked with the former that all specimens were wizened little dwarfs because they'd overrun their special food supplies, while a few lazy old bass loafed on the bottom, probably thumbing their noses at the silly fishermen with their gaudy plugs and baited hooks. Why should any bass take a snap at such lures when natural food—bluegills—was his for the simple spreading of indolent jaws?

In Illinois, George W. Bennett and David H. Thompson of the Illinois Natural History Survey were finding similar conditions. The story of one of their projects will illustrate.

This was Fork Lake, an acre-and-a-half artificial impoundment near the town of Mount Zion, owned by Paul S. Smith. It was created about 1920 by building a dam, was stocked with bass, bluegills and sunfish, and for a number of years afforded Mr. Smith and his friends excellent fishing. In the course of time, however, the fun cooled off. Other pan and game fish were introduced, along with forage species to furnish food. Nothing seemed to do any good. When Bennett and Thompson poisoned it out, the reason became obvious.

They gathered—from an acre and a half of water, remember—5,350 fish, weighing 744 pounds and representing sixteen species! The kinds ranged from largemouth bass to bullheads by way of crappie, sunfish and channel cats. And of those thousands of fish inhabiting the pond, only 145 were of edible size. With all the natural food—the small fish—available, why should the bigger ones have exposed themselves to the menace of anybody's frying pan?

We could cite dozens of cases where too many fish of too many kinds have made poor sport, but let's go on instead to investigate the reason. It lies in the manner in which some fish live and grow and multiply in association with other fish. Take the bluegill and largemouth-black-bass combination, probably the most widespread association of warm-water fishes found on the North American continent. You can substitute sunfish for bluegills, and crappie and maybe walleyed pike for bass, and find about the same reactions, but we'll stick to the bluegill-bass cast of characters.

Now, the bluegill is a prolific spawner. We can quote you evidence of it. Up in Michigan, where the growing season is comparatively short, the Elmira Sportsman's Club managed a two-acre rearing pond in 1942. They put twenty pairs of adult bluegills in the pond June 1. In early October they took out 436,570 fingerlings! That gives you an idea of the number of young a pair will beget—in this four-month case, an average of more than 20,000 per couple. As you go south, the bluegill's spawning season lengthens. They simply squirt eggs all summer long in the lower latitudes, which means that there is a constant seasonal supply of fry leaving the nests.

The bluegill is a plankton and insect eater, with one special exception which will appear in a moment. As long as the plankton—minute vegetable and animal organisms—and the insects are abundant, the bluegill gets along famously and grows to beat the band. In his central range, he'll grow in less than a year to 6 inches, the general legal size. Farther south, he'll do better.

A baby bass wants the same fodder the bluegill does, as long as he's a baby. But by the time he attains his youth, he wants flesh—fish flesh. From then on to the end of his days, he eats any fish of suitable small size, including his own young. So when the growing bass turns to a fish diet and the long-spawning bluegills are present, he gobbles bluegill fry just as his papa and mama have been gorging themselves on bluegill fry and fingerlings most of their lives.

Because all bass in a given piece of water will spawn within the same few days or weeks, the age groups of a bass population are about of a size. Age groups of the long-spawning bluegills, on the other hand, have a considerable range in weight and length, and so there are generally plenty of young bluegills of a size to suit a bass of any age . . . so long as the population remains in balance.

But once that balance is upset, there's the devil to pay. Suppose the bass for any reason aren't able to hold the bluegills in check. If these latter increase to a point where they're over-taxing their normal food supply—plankton and insects—they'll turn to bass eggs while the bass are spawning. This, naturally, cuts down bass production. And the farther behind bluegill numbers the bass delegation falls, the more bluegills escape bass gullets to demand food of their own, and there you are! The bluegills go hog-wild as producers of progeny, and with insufficient food, they can't grow anywhere

near as big as they should, and what bass are left have the easiest picking in the world.

If, as so often happens, forage fish, such as gizzard shad and golden shiners, are introduced to make more bass food, you only add to the confusion. Most forage species eat what bluegills and baby bass eat. You're taxing food supplies with a species that is neither gamy nor palatable, and all is chaos. Look back at Fork Lake for an example.

Because the black-bass-bluegill combination, in proper balance, is a natural for so much of our water, it formed the basis of a pattern followed in the recently launched farm-pond program. This got going in the '30s when the U. S. Soil Conservation

Concentrations of trout fishermen such as above make stocking of trout necessary. Most other fish supply the demand through natural reproduction.

Service and other federal agencies plugged for more farm ponds to furnish water for livestock, check erosion and so on. Obviously, such impoundments could do further duty by raising fish, if properly handled, and SCS began plugging the idea hard. A lot more than increased food production resulted, as we shall see.

Thousands of farmers, from Illinois down to the Gulf and over into the semiarid West went for ponds. The U. S. Fish and Wildlife Service was swamped with orders for fish to stock the waters. Based on the findings of Swingle and Smith, blanket recommendations for stocking in the Southeast were 1,500 fingerling bluegills and 200 fingerling bass to the acre for a pond coming under management. Experience has shown that enough bluegills will generally escape their pursuers, to grow too big for the bass to swallow and insure future supplies of bass food.

Of course, the aquatic plants and minute animals which mean grub for bluegills just don't happen in a newly made pond, although they start to appear by natural means very soon. Their abundance is stepped up rapidly by use of commercial fertilizers.

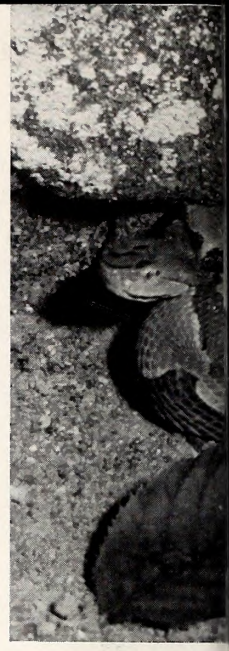
But once the food supply is assured and your fish population is established, the next thing to consider is the harvest. No farmer turns sheep into a pasture and lets them multiply indefinitely without marketing some. The same principle holds for fish. As soon as that fish population approaches the limits of its food supply, you must take out enough to hold it within bounds.

The necessity of hard and regular and constant fishing is perhaps the most difficult factor of pond management that the government agencies have to put across. Folks are so accustomed to believe that you must fish conservatively, if you want to have good fishing, that they just don't do the job. Where they do, 300 pounds and more to the acre of water are yielded annually, with plenty of stocks remaining. That figure prevails where conditions are good, but the farm pond that won't produce at least 100 pounds per acre per year and retain its potentials—if it's *properly managed*—is rare.

Early in 1945, Edward H. Graham, chief biologist of the SCS, told me that in organized soil-conservation districts 5,500 ponds were under management. The war stopped new construction, but once peace came the number skyrocketed. I know that one of Graham's great fears is that people won't believe him when he tells them that to keep fish production good, they must fish their ponds as they've never fished anywhere before.

Now, it may be argued that the farm pond is one thing and the natural lake is another. But from those small waters—they run typically from a fraction of an acre up to four or five—we have learned much that is applicable elsewhere. It has made our years of observations on natural lakes add up to

It is impossible to over-harvest pan fish with hook and line in ordinary ponds and lakes.



Above: The copperh
It is easily identified
agricultural land and

← At left is the business end of a rattlesnake. Not the curved fangs which are hollow like hypode mic needles. When these are broken off they ar replaced by smaller fangs which move forwar and develop into poison injectors.

Below is a puff-adder or hognose snake, popularly believed to be venomous. Absolutely harmless, it is presenting here its famed bluff by pretending to strike.

SNAKES!

(Reprinted Courtesy Missouri Conservation)

the more common poisonous North Carolina snakes. ctive markings and does not have rattles. It frequents nd cover along lakes and streams.

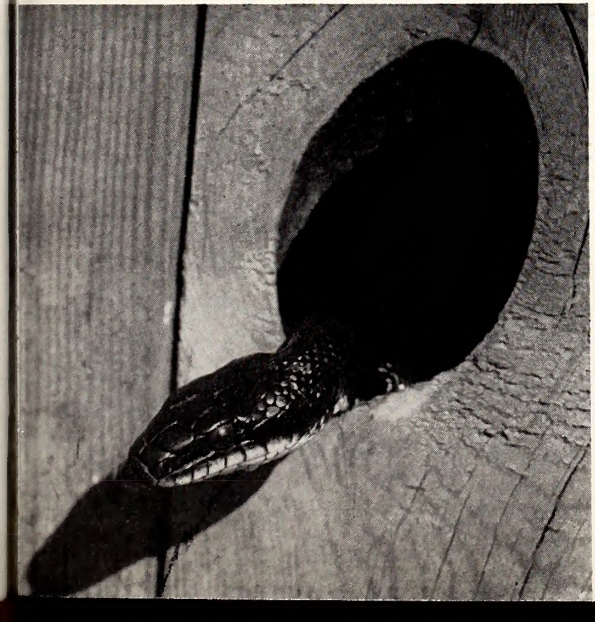
Above: The timber rattlesnake is closely related to the canebreake rattler. Both are very large snakes. Canebreake rattlers may reach a length of 8 feet and a body thickness of 9 or 10 inches.

ove: The cottonmouth water moccasin inhabits the ironment of lakes, streams, and swamps. It is very sonous. Below: The pilot black snake is harmless and aluable killer of rats and mice.

Pictured here are only a few of North Carolina's snakes. For a very excellent bulletin on North Carolina snakes write to Mr. Harry Davis, N. C. State Museum, Raleigh, N. C., and enclose ten cents.

Sometime in the future we plan to run a feature on North Carolina's snakes. Many of them are dangerous while others are relatively beneficial and harmless. The photos on these pages were taken by Rex Gary Schmidt, formerly with the Missouri Conservation Commission and now with the U. S. Fish and Wildlife Service.

Below is a pigmy rattlesnake. These are the smallest of North Carolina rattlers, but their bite is venomous. This midget of rattlers seldom exceeds two feet, and has a rattle about a quarter inch long.



something. We've learned the answer, perhaps, to New York state's problem of stunted black-bass populations, over which investigators started shaking their heads a quarter of a century ago. We've learned that T. H. Langlois, fisheries boss for Ohio, wasn't so cracked when he came out with the statement a few years back, that underfishing rather than overfishing might be Ohio's trouble. We've learned enough so that we weren't left gasping when R. W. Eschmeyer, TVA fisheries investigator, proved by the swellest job of research on game fish ever done in the country that less than 20 per cent of the standing crop of bass in Norris Reservoir was being taken annually and that the bulk of the crop was succumbing to old age without ever sampling an angler's lure!

But most fishermen are still dubious. Take, for example, the outcry over Missouri's Lake of the Ozarks, that 60,000-acre impoundment on the Osage River. When the reservoir was flooded a few years back, fishing was swell, both for black bass and pan fish. Then it went suddenly sour. The boys couldn't catch enough legal fish to make trying worth while, and great was their protest.

The Missouri Conservation Commission decided that the basic trouble, after allowing for a varying water level and some other factors was underfishing. So they reduced size limits, upped bag limits, extended the season, and stopped hatchery plantings. The fishermen's squawks over this remedy were as loud and long as their complaints had been. Some of them figured the commission had blown its top.

Now all that is forgotten . . . because enough folks fished harder and longer and took home enough more fish to bring the big lake back as a swell place to try your luck. Moreover, restrictions have been let down for many other Missouri waters. And Nebraska and Oklahoma and the Tennessee Valley states are all following suit.

But each state that tries the liberalizing of regulations finds itself bucking its citizens' inertia. Fishermen, with their minds, can accept the logic of the new approach, but when it comes to their emotions—well, it's tough going.

Sometimes they won't even see the logic of it. A respected friend of mine missed the lesson of a significant occurrence up my way. Although I won't say his name, he is a real person, and in more than one sense. A danged good, earnest citizen, I mean. He's a member of civic groups and puts in a lot of time working to increase the tourist industry, the No. 1 asset for his community. And in a northern state, good fishing is essential to the tourist business.

Now, he has a cottage and owns frontage on a bang-up bluegill lake. Some bass, too, but mostly bluegills, and the dudes take 'em by the peck. They have, year after year. But a couple of years ago one of those things happened. Bluegills died by the thousands. They washed up on the beach in windrows. Conservation technical men couldn't find a thing wrong with 'em. They were just dead. The lake, somehow, was getting rid of its surplus.

"What did you make of it?" I asked this chap a few weeks ago. "Could you notice it in the fishing?"

"No," he said. "We lost a lot of fish, but we kept catching more. I guess it was just Nature's way."

He went on: "It's important that fishing holds up here. We've got six boat liveries and more than three hundred cottages. Fishing brings in a lot of money and supports a lot of taxable property.

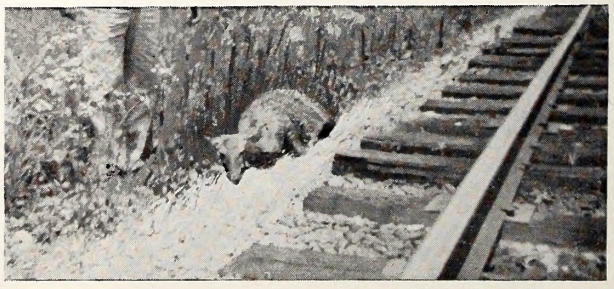
"So I'm starting a petition. I'm just afraid that if we keep on letting folks take fifteen bluegills a day, we'll get into trouble. I'm doing my best to get the state to reduce that limit."

There you have it! In one breath the guy agrees that Nature had to find a way to get rid of excess bluegills; in the next, he wants to fix it so folks can't take so many. Are fishermen creatures of habit? I'll tell the world they are!

ANSWER TO FISH PICTURE PUZZLE:
1-d, largemouth black bass; 2, pumpkinseed sunfish; 3, brook or speckled trout; 4-b, smallmouth black bass; 5-c, bluegill sunfish; 6-a, catfish; 7, yellow or raccoon perch.

Did YOUR Dog Do This?

The future of deer hunting in North Carolina depends on the enactment of legislation which will help eliminate the stray dog menace. Each year uncontrolled hunting dogs molest and kill hundreds of doe deer heavy with young. Dogs kill many helpless new-born fawns. Your Wildlife Resources Commission needs your help if its long-range big game restoration program is to succeed. Let's control free-hunting dogs!



Photos by Lester A. Pierce

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

THE 1950-1951 HUNTING REGULATIONS HAVE BEEN PRINTED AND DISTRIBUTED TO FISH AND GAME PROTECTORS AND HUNTING LICENSE DEALERS THROUGHOUT THE STATE. THEY ARE EFFECTIVE FROM AUGUST 1, 1950 THROUGH JULY 31, 1951. INCLUDED WITH THE REGULATIONS ARE EXTRACTS OF LAWS PERTAINING TO HUNTING, TOGETHER WITH TRAPPING REGULATIONS, GENERAL REGULATIONS, AND REGULATIONS REGARDING WILDLIFE MANAGEMENT AREAS, REFUGES, AND SANCTUARIES.

JACK DERMID, WHOSE PICTURES AND STORIES HAVE APPEARED ON THE PAGES OF "WILDLIFE" FROM TIME TO TIME BECAME A PERMANENT MEMBER OF THE EDUCATION DIVISION STAFF OF THE WILDLIFE RESOURCES COMMISSION ON JULY 15. DERMID HAS JUST RETURNED FROM OREGON WHERE HE HAS BEEN DOING GRADUATE WORK AT OREGON STATE COLLEGE. HE WILL DO CONSIDERABLE PHOTOGRAPHY, FEATURE WRITING, AND AID IN GETTING "WILDLIFE" OUT IN THE MAIL EACH MONTH. HE IS A NATIVE NORTH CAROLINIAN, AND A GRADUATE OF N. C. STATE COLLEGE.

R. EUGENE SMATHERS, WHO HAS BEEN IN CHARGE OF THE ARROWOOD GLADE FISH REARING STATION HAS BEEN APPOINTED TO SUCCEED THE LATE DONALD STUBBS AS SUPERINTENDENT OF THE STEDMAN FISH HATCHERY NEAR FAYETTEVILLE. SMATHERS HAS BEEN IN FISH CULTURE WORK IN NORTH CAROLINA FOR A NUMBER OF YEARS, AND IS HIGHLY QUALIFIED TO ASSUME DUTIES AS A HATCHERY SUPERINTENDENT.

WALLEYED PIKE FISHERMEN ARE WATCHING WITH INTEREST THE PROGRESS BEING MADE BY 4,000,000 WALLEYE FRY WHICH WERE RELEASED IN FOUR RESERVOIRS THIS SPRING. LAST YEAR A NUMBER OF WALLEYES WERE STOCKED IN LAKE JAMES, AND FISHERMEN HAVE REPORTED GETTING SOME OF THESE FISH MEASURING UP TO 14 INCHES IN LENGTH. WALLEYES ARE EXTREMELY FAST GROWERS, AND THIS YEAR'S STOCKING SHOULD BE READY FOR THE CREEL BY LATE FALL OF 1951.

TWO FISH SURVEY CREWS ARE IN OPERATION IN N. C. LAKES AND STREAMS THIS SUMMER. ONE CREW IS WORKING IN THE TROUT WATERS OF THE WESTERN END OF THE STATE, AND ANOTHER IS WORKING IN THE RESERVOIR CHAINS. THE SURVEYS ARE DESIGNED TO OBTAIN INFORMATION ON HABITAT CONDITIONS FOR FISH. THIS INFORMATION WILL BE USED IN SETTING FISH STOCKING POLICIES.

ON SEVERAL OCCASIONS DEAD FISH FLOATING DOWN NORTH CAROLINA STREAMS HAVE BEEN REPORTED TO THE WILDLIFE RESOURCES COMMISSION. INVESTIGATIONS OF THESE INSTANCES HAVE DISCLOSED THAT THE FISH WERE DYING OF POISONS WASHED INTO THE WATER BY HEAVY RAINS. SOURCE OF THE POISON WAS ORCHARDS AND OTHER AGRICULTURAL CROPS SUCH AS COTTON AND TOBACCO WHICH HAD BEEN SPRAYED WITH INSECTICIDES IMMEDIATELY BEFORE HEAVY RAINS. SUCH LOSSES OF FISH, HOWEVER, ARE INFREQUENT.

SPORTSMEN ARE AGAIN WARNED THAT ENTOMOLOGISTS AND ANIMAL PATHOLOGISTS EXPECT ANOTHER HEAVY OUTBREAK OF SCREWWORM IN DOMESTIC LIVESTOCK AND DEER. LAST YEAR A NUMBER OF DEER WERE KILLED BY SCREWWORMS, AND ANOTHER MILD WINTER MAY HAVE INCREASED THE DESTRUCTIVE POTENTIAL OF SCREWWORMS FOR THE COMING SEASON. AS WE GO TO PRESS, NO REPORTS HAVE BEEN RECEIVED OF DEER SICKNESS SUCH AS INFECTED DEER LAST SUMMER AND FALL. MEANWHILE, HEALTH AUTHORITIES ARE STILL GRAVELY CONCERNED ABOUT BUBONIC PLEAGUE ENTERING NORTH CAROLINA VIA IMPORTATIONS OF COTTONTAIL RABBITS FROM WESTERN STATES.

THE 1949 SCREWWORM OUTBREAK IN NORTH CAROLINA

By GEORGE D. JONES
Extension Entomologist
North Carolina State College

(This is a report on screwworm damage to livestock. Considerable damage is done to deer also).

THE screwworm fly (*Callitroga americana C. and P.*) attacked North Carolina livestock in some 80 counties during 1949 and caused the worst outbreak on record. According to Entomologists in the Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine, U. S.-D. A., and in the Department of Zoology and Entomology at State College, there were a few cases in the state during 1933 and 1934, when the pest spread northward in southeastern states. No definite report has been found of the extent of the outbreak in the state. The U. S. Department of Agriculture attempted a clean-up campaign at that time to eliminate the pest from the United States. The screwworm is believed to have spread northward from Mexico into Texas about 1840 and into lower southeastern states during the early 1930's.

The pest was formerly known as *Cochliomyia americana C. and P.* It was only in 1933 that Cushing and Patton made the discovery that this fly was not C. macellaria a very close relative. The adult flies are very much alike being distinguished by details of the genitalia. The maggots or larvae show easily recognizable differences. C. macellaria is considered a true blow fly and breeds usually in carcasses. C. americana is considered a true parasite attacking the wound of a living animal. The adult screwworm fly is a large greenish-blue fly with an orange-red face. Some 150 to 300 eggs are laid in shingle-like masses. The eggs are glued together. Only a few may be laid at one time. They are deposited on the edge of a wound. The eggs hatch in from 6 to 21 hours. The tiny worms feed in clusters, eat into the live flesh and may cause a "pocket" to form. After 3 to 10 days they complete development and work their way to the surface and drop to the soil. They burrow into the soil and some 7 to 14 days later the adult fly will emerge. After about five days they are ready to mate and lay eggs. The average life cycle during the summer months is about 24 days, and much longer during cool weather.

The pest does not survive when the mean daily temperature falls below 49°F. for three months or 53°F. for five months. Adults are killed in temperatures below 20°F. and pupa at 15°F. Ordinarily the screwworm survives the winter only in the states bordering the Gulf area of the United States. Movement of infested livestock northward from the known infested areas in early spring is an important method of distribution of the pest. This is a very destructive insect and it has caused North Carolina farmers much distress.

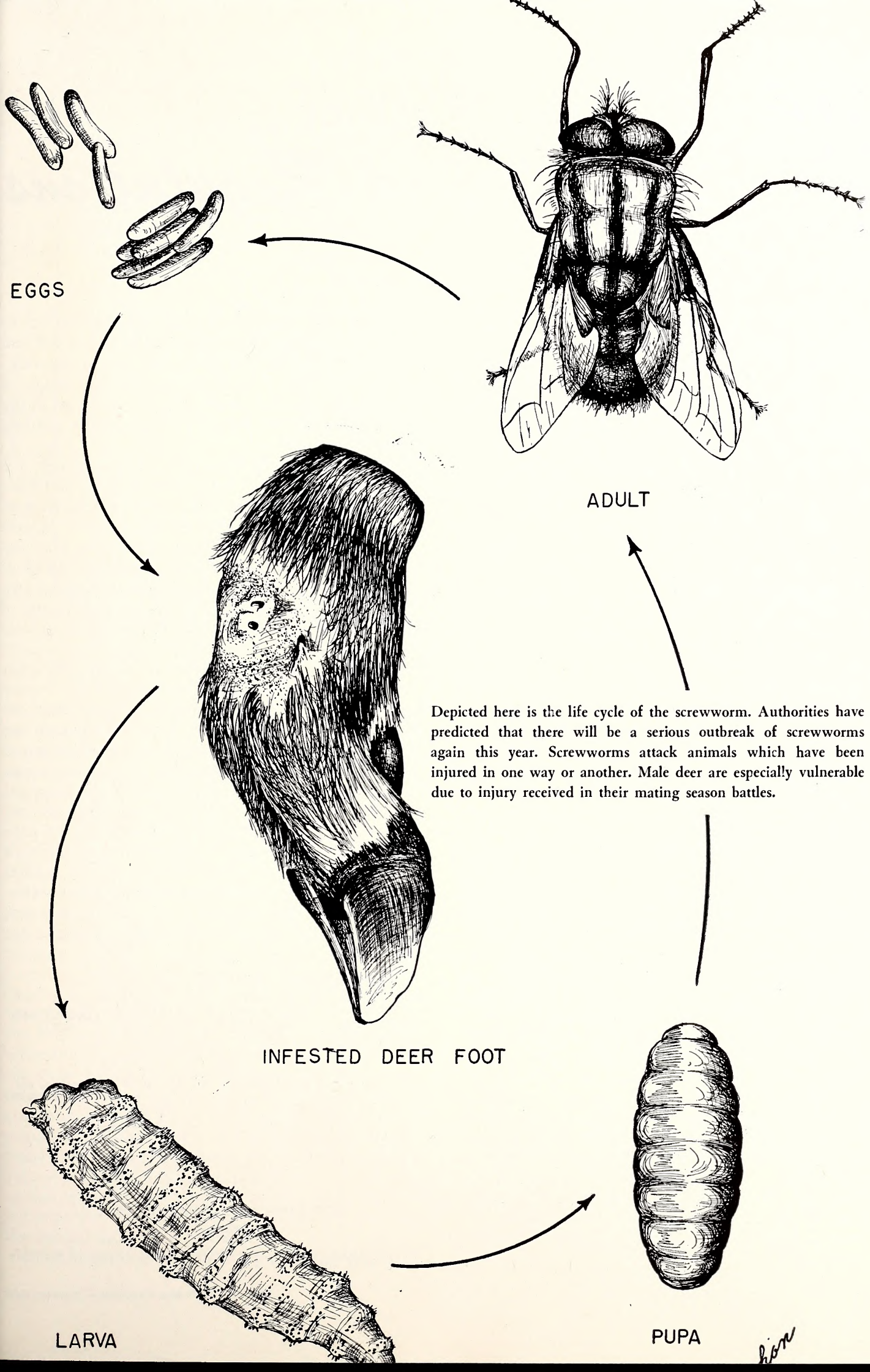
A survey made in the state during the late fall in 1949 showed some 25,000 farms infested in at least 80 counties. A careful estimate of the number of livestock attacked in the infested counties showed upwards of at least 75,000 cases. See the attached map for distribution of the cases in the state and a summary of information secured from County Agents in some twenty counties.

It is difficult to estimate the loss in terms of dollars to the livestock industry in the state but information leads one to believe that it ran into thousands of dollars. Some farmers had to have a man devote his entire time to watching for infestations and treating cases. New born pigs and calves were frequently attacked. Dogs and wild animals such as deer were found infested. Humans were also attacked. One human case, a Negro man, was treated in a hospital in Burgaw, N. C. Dr. N. C. Wolfe removed several specimens from the man. While only a few animals died many animals were permanently injured. Destroyed tissue often caused lameness. In addition many animals had to be handled during treatment. It seemed that every scratch or wound on an animal in many localities became infested.

The first cases appeared in the state during June in the Wilmington, Whiteville and Lumberton areas. By September cases were reported at Goldsboro, Kinston, New Bern and Washington. The infestation spread westward to Charlotte, Rutherfordton, Statesville, Winston-Salem and Greensboro by October. The above survey data secured in December showed that cool weather during November stopped widespread activity.

The 1949 outbreak in the state appeared to be a

(Continued on page 23)



Depicted here is the life cycle of the screwworm. Authorities have predicted that there will be a serious outbreak of screwworms again this year. Screwworms attack animals which have been injured in one way or another. Male deer are especially vulnerable due to injury received in their mating season battles.

THE HOW and WHY of *Waterfowl Regulations*

By HAYDEN W. OLDS

Assistant to the Executive Director

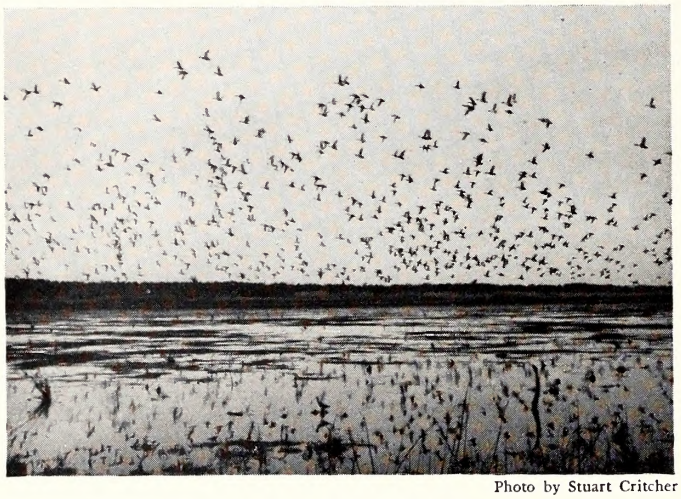


Photo by Stuart Critcher

This looks like a lot of pintails, but the picture was taken in their winter concentration.

"IN opening his address before the Fifteenth North American Wildlife Conference at San Francisco, California, on March 8, 1950, Director Albert M. Day, of the U. S. Fish and Wildlife Service stated: 'I was hoping that I could stand before you today and give an encouraging and optimistic report about the waterfowl situation—that I could substantiate the impressions of an increase in ducks and geese that many of us gained from our observations afield last fall. Such a statement would be a welcome relief, I can assure you, from the kind of reports it has been my lot to submit during the past five years—but, again, it can't be done. It looks now as though instead of gaining ground last year, we more than likely lost some of the previous years' gains and not only took the harvestable crop but also cut into the capital stock of this year's breeders.'

"That is the unpleasant fact as a thorough analysis of the data resulting from the inventory of January 1950, shows a decrease of more than 20 per cent from the figures of a year ago. Because of a mild and open fall, the ducks and geese moved south slowly so that hunters in many sections of the country may actually have seen *more* birds over a longer period of time than they did in the season of 1948. For the same reasons, the waterfowl did not move so far south; consequently the inventory figures from Mexico showed a startling reduction.

"Most other migratory game species appear to have a reasonably satisfactory status. Woodcock and the different species of rails seem to have maintained their numbers and there is some indication of improvement in the Mourning Dove situation in the Southeast and the Wilson's Snipe may be gaining ground slowly."[1]

Of importance and interest is how through the years the number of waterfowl hunters has compared to the size of the continental waterfowl population. (Figure 1—Waterfowl Hunters vs. Waterfowl Population Trends) Early settlers on this continent had the opportunity to view great flocks of waterfowl, which may have totaled as many as two hundred million birds. Through two centuries of time, unrestricted hunting and reduction of habitat reduced this original number of birds to an estimated thirty-four million in 1934. At about that time, the urgency for continental restrictions on seasons and bag limits was acute. Although in the next decade the number of hunters increased, through the benefit of long over-due restrictions on the length of season and daily bag limits, the total waterfowl population approached approximately half of its original number. A decrease in hunting due to the Second World War gave added impetus to the upward population trend. However, after the war, the number of hunters again surged upward until, in 1947, a total of two million duck stamps were sold, which figure has remained constant since. On the other hand, the number of waterfowl decreased sharply until,

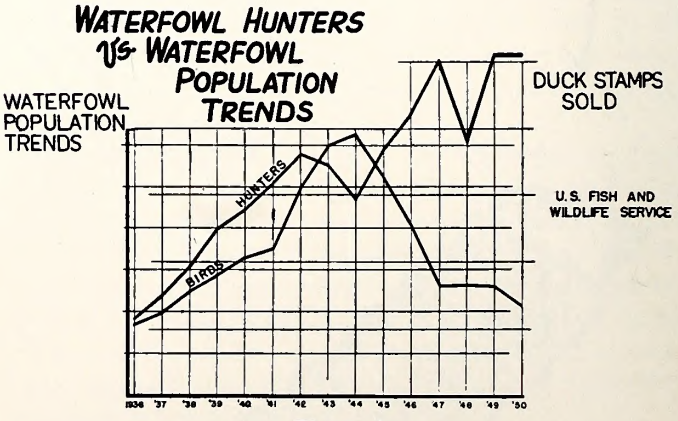


Figure 1

1/United States Department of the Interior, *The Status of Migratory Game Birds: 1949-50*, pp. 1-2.

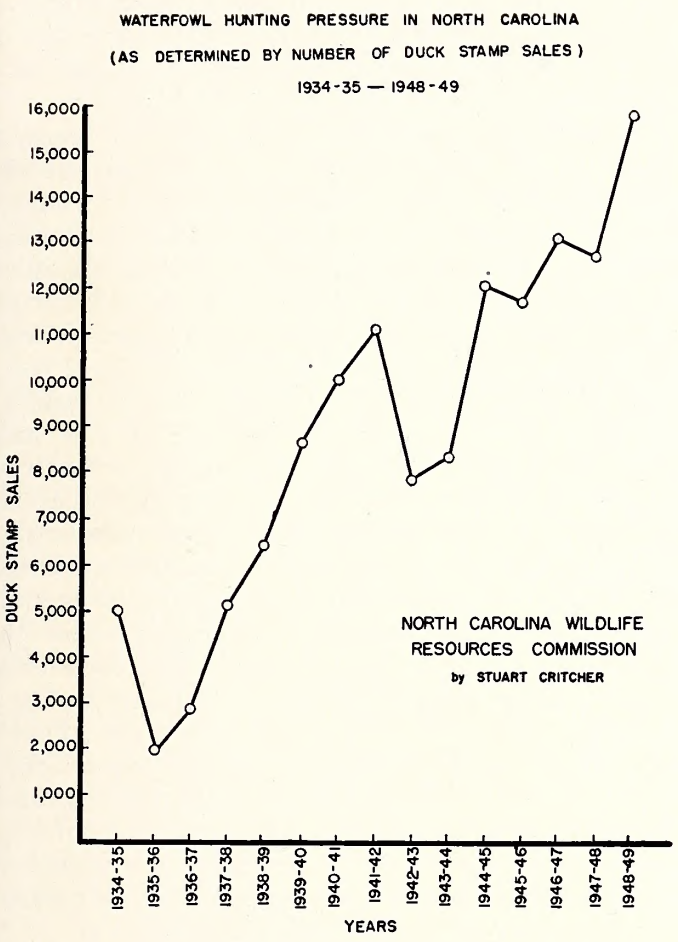


Figure 2

in 1950, the continental population is again approaching the low of 1934. To bring this closer home the number of State Hunting Licenses and Duck Stamps sold in the Southeast doubled during the years 1939-1949, and in North Carolina the sale of Duck Stamps tripled during the same period. (Figure 2—Waterfowl Hunting Pressure in North Carolina as Determined by Number of Duck Stamp Sales)

There is often some doubt in the minds of waterfowl hunters relative to the accuracy of the statistics annually released by the United States Fish and Wildlife Service. This information is cooperative in nature and is a result of the efforts of federal employees, state employees, and private agencies. Two extensive surveys are made annually, of which the first is a count of the continental population of waterfowl remaining on the wintering areas after the close of the waterfowl season. All major concentrations and most minor ones on the continent are counted by wildlife technicians using planes owned by federal and state agencies, plus others made available by the army, navy, and coast guard. The number of birds determined by this annual winter count is important as it represents the breeding population which will soon go north to produce the annual increase in population.

In making the second or breeding ground survey, technicians of the United States Fish and Wildlife Service and personnel financed by cooperating agencies such as Ducks Unlimited, the Arctic Institute of America, and English interests actually follow the waterfowl to their most northern-known breeding grounds. While at altitudes of one hundred feet, thousands of miles are flown by plane, other thousands being covered by boat, automobile, and on foot. In the United States a similar survey is made by State Game Departments, primarily with the use of Federal Aid Wildlife Restoration funds. This annual nesting ground survey is usually completed prior to the end of July, and as soon as possible thereafter the accumulated findings are made known to the states with emphasis upon how they effect potential hunting regulations. Usually a choice of a continuous hunting season or a split season is given. In 1949, all but twelve states chose continuous shooting days. Staggered seasons, which scatter a definite number of shooting days through a period of two or three months, are not permitted, as past experience definitely shows that this type of regulation greatly increases the kill.

In moving from north to south and from south to north, the waterfowl use very definite lines of travel which are known as flyways. These routes of travel have been determined by a system whereby birds are live-trapped, banded and released. A record is carefully kept to be checked against the return of the band, which may be taken from the bird by a hunter at some distant point or possibly retrapped at another banding station. Based upon the records of many years, four definite flyways have been determined, these being known as the Pacific, Central, Mississippi, and Atlantic Flyways. It has been further disclosed that the same birds and any offspring use the same flyway year after year. There is little exchange of traffic or populations between flyways. Because of this peculiarity, the regulations are necessarily and advisably established on a flyway basis. A scarcity or increase of birds in one flyway does not reflect in another, there-

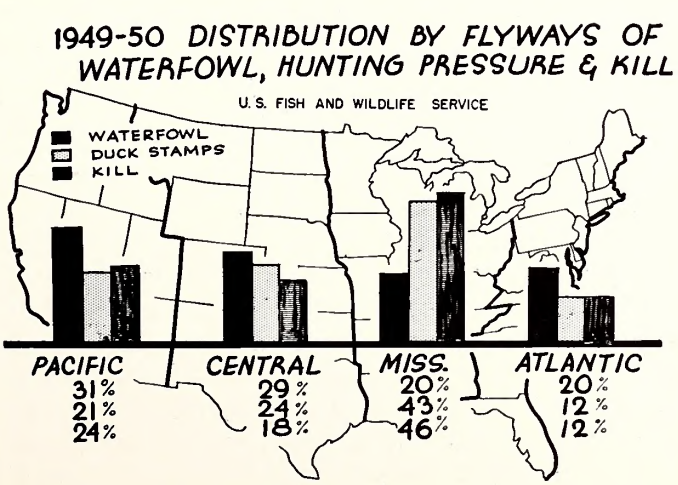


Figure 3

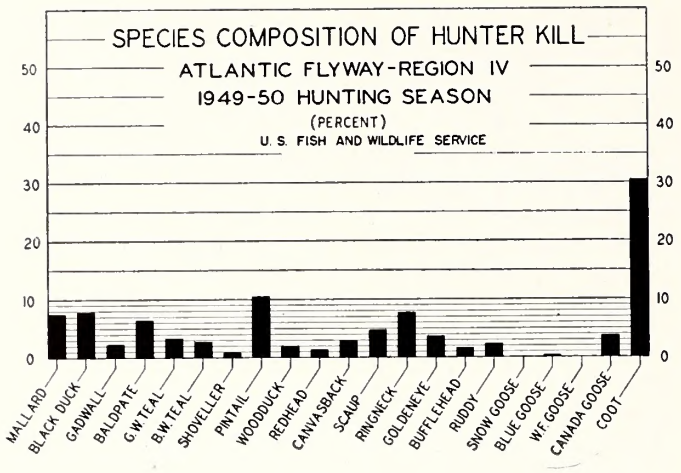


Figure 4

fore, it is reasonable that each flyway should have separate consideration.

The Atlantic Flyway, which roughly includes all states adjoining the Atlantic Seaboard from Maine to Florida, is in comparatively good condition, as indicated by the fact that approximately twenty per cent of the total continental waterfowl population is to be found therein. At the same time, the Atlantic Flyway has twelve per cent of the hunters who make approximately twelve per cent of the total kill. By comparison, the Mississippi Flyway has twenty per cent of the waterfowl and forty-three per cent of the hunters who make forty-six per cent of the kill. It should be readily noted that a flyway having only twenty per cent of the total population of birds cannot continue to supply forty-six per cent of the kill. It would be safe to say that the sportsmen of the Mississippi Flyway in future years must more carefully conserve their supply of birds or face inevitable restrictions on shooting. (Figure 3—1949-50 Distribution by Flyways of Waterfowl, Hunting Pressure and Kill)

The two most numerous species of waterfowl on the North American continent are the Mallard, or the common Wild Duck of the world, which makes up twenty-one per cent of the total waterfowl population and the Pintail which makes up twenty per cent. Neither of these birds, however, dominates as to number in the Atlantic Flyway. The Coot or commonly-called Blue Peter is more common in the Atlantic Flyway, as waterfowl hunters bag more of them than of the next four most numerous ducks combined; namely the Mallard, Black Duck, Pintail, and Ringneck. Though the Coot may not be so highly thought of by some sportsmen, it very definitely is providing a large proportion of the available shooting. The total wintering population by species of the Atlantic Flyway, however, is not exactly in ratio to the hunter kill. The Coot is more numerous than the combined populations of the Canada Goose, Scaup, Ringneck, Pintail, Black Duck, Wood Duck, Baldpate, and Redhead. This further emphasizes the importance of the Coot to the Atlantic Flyway. (Figure 4—Species Composition of Hunter Kill—Atlantic Flyway—Region IV, 1949-50 Hunting Season)

A waterfowl program based upon the known habits of the birds requires that the waterfowl receive help and protection during the winter throughout its southern winter range. Similar assistance must be provided in the way of nesting grounds during the summer months, and as the birds travel from south to north and return, resting places where they are safe from illegal hunters and natural enemies must be provided. To accomplish such results, the United States Fish and Wildlife Service has established more than two hundred waterfowl refuges, combining a total of over three million acres of marsh land and water. Some of these refuges are primarily for breeding purposes, some for wintering and others on lines of travel between breeding and wintering grounds serve well as resting areas. In addition to federal refuges, many states have established similar areas which serve the waterfowl according to whether the state lies within the wintering, migration, or breeding zones. Each year, additional states are adding their efforts to this program, as is North Carolina, which will during the current year develop a series of old rice fields on the southeastern coast, thereby creating excellent wintering conditions for a sizable number of waterfowl.

There are three federal waterfowl refuges in North Carolina. Pea Island National Wildlife Refuge on the outer banks south of Roanoke Island provides a wintering home for the Greater Snow Goose; in fact probably half of the entire known population of this great bird winters at Pea Island. A considerable number of Canada Geese and many species of ducks also winter there. Swanquarter National Wildlife Refuge near the town of Swanquarter in Hyde County is of greatest importance to diving ducks such as Redhead, Scaup, Goldeneyes, and Bufflehead Additional marsh lands are being acquired by the Fish and Wildlife Service, whereby the size of this refuge will be increased. Mattamuskeet National Wildlife Refuge in Hyde County is undoubtedly the best known. It is here that fifty to sixty thousand Canada Geese return each fall, and almost an equal number of ducks. A system of public hunting is permitted, and each year large numbers of hunters enjoy the sport of waterfowling. A greater number of hunters also hunt in the fields surrounding the refuge, thereby increasing the importance of the area to waterfowl hunters.

The North Carolina Wildlife Resources Commission protects several wintering concentrations of waterfowl on both public and privately-owned lands. In addition to the efforts of the state and national agencies in North Carolina, Mr. Fred Latham of Belhaven and Mr. Lockhart Gaddy of Ansonville have, through personal efforts, built flocks of Canada

Geese from a small beginning to numbers approximating five thousand. Such efforts on the part of individuals are excellent examples of how protection can benefit and perhaps increase Canada Goose populations.

As further evidence of the value of a refuge system in the management of the continental waterfowl population, records kept through the years indicate that the average number of waterfowl using the refuges remains rather stable, although the over-all population may fluctuate a great deal from year to year. In normal years, it is estimated that one-fifth of all waterfowl use one or more of the established refuges. Such a system, therefore, seems to guarantee that at least one-fifth of the total population of birds can be protected and cared for. The balance must necessarily use marshes and waters open for public or privately-controlled shooting. This ratio of protected area to open area does not seem too great.

In conclusion, it should be remembered at all times that the waterfowl resources of this continent are not the sole possession of any county, state, or even nation. At some time during the year, they are in the custody of each part of the continent. If breeding grounds are not provided and the birds protected during the spring and summer, only a limited number of birds can return south. Likewise, if the areas within the wintering range do not return adequate birds to the northern breeding grounds, reduced waterfowl populations will result. Neither can the intermediate states take undue harvest of the birds as they pass through on their annual migrations. It is at all times necessary to consider the management of these birds on a continental basis. An increase in birds at one relatively small location does not necessarily mean there has been an over-all increase in the number of birds. Mild winters may result in birds' staying in North Carolina in increased numbers instead of going farther south as they will usually do under more severe weather conditions. It is normal for communities in this state to interpret any increased local populations to their advantage. However, in South Carolina, Georgia, or Florida, the normal number of wintering birds may have been drastically reduced. North Carolina sportsmen, as a result, would be gladened by what seemed an increase in birds, but sportsmen farther south would be highly critical because of what to them was an evident decrease. This is but one example of the necessity of widening our understanding of this important national resource. The problem will be well on its way to a final solution only when the importance of considering the management of waterfowl on a continental basis is fully understood.

Some Vegetable Food Items Taken By Rainbow Trout

While the writer was examining the contents of some trout stomachs taken from streams in western North Carolina, an unusual item appeared in a 14" rainbow (*Salmo gairdnerii irideus*). This specimen was taken on August 30, 1948 by a fly fisherman at the head of Wilson's Creek in Avery County. The stomach contained seven fully mature watermelon (*Citrullus vulgaris*) seeds. Several others were found in its throat. The stomach contained no other items. The trout, which appeared to be in excellent physical condition, was caught from a pool a few yards below the Scenic Highway. It was apparently feeding on the seeds as they floated down stream from a nearby picnic site.

Rainbow trout are reported by the natives to be fond of the fruit of the service berry (*Amelanchier sp.*) but no trout stomachs taken during this fruit's period of availability have been examined. Trout in several protected areas in North Carolina eat bread readily but the above instance is the only one of which I am aware that indicates they feed on watermelon seeds.—Frederick S. Barkalow, Jr., *Professor of Zoology, N. C. State College of Agriculture and Engineering, Raleigh, N. C.*

Prong-Horn Likeness

The prong-horned antelope is unique among mammals. It is not specifically related to the deer, wild goat or giraffe—yet it has characteristics common to each of these animals. Like a giraffe, it has two hoofs on each foot. It is similar to the goat in that it has musk glands and a gall bladder. It has forked horns like the deer, but the horns are formed from agglutinated hair. Instead of shedding them entirely like the deer, they cast off the outer shell after the rut, leaving a bone-like core on which grow new horny shells.—Joe Austell Small.

Canada geese are still at a low population level, and a low bag limit may be expected again this year.

I DON'T BELIEVE IT!!! HOW ABOUT IT??

IS IT TRUE?? HERE IS YOUR CHANCE TO—

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

AUGUST—the month of vacations, camps, languid days and general inertia—the in-between month between fishing and hunting. Next month the season will open on rail, sora and gallinule for those of us having access to the marshy habitat frequented by these birds.

More people than ever will be carrying firearms into the field this year and if things go as they have in the past, many a trip afield which started in high spirits and with nothing but pleasure and sport in mind will end in tragedy—all because of one careless moment or thoughtless act. It is well to reflect in August, on the condition of our equipment. Many of you reading this know of some minor repair needed on your shotgun or rifle. Have it done now!

Has your youngster recently come into possession of a firearm? Are you letting him acquire the knowledge of its proper and correct handling the hard way—at the possible expense or harm to himself or others?

One of the joys of having a sportsman parent is the privilege of showing the youngsters how. Promoting safety with firearms among the youth and adults is a duty which, when conscientiously performed, will pay dividends in better conservationists, sportsmen and citizens. It is up to us to set a fair mark for others to shoot at and then teach them to shoot fair and straight.—W.D.

From Mr. D. E. C. of Draper, N. C.: "Being a subscriber of your fine little magazine, 'Wildlife In North Carolina,' I would like to take this opportunity of expressing my thanks for this magazine, but in my estimation it lacks one thing of being complete, and that is a page or column of want ads. This would give us sportsmen a chance to advertise what we have for sale or trade in the sporting line such as guns, fishing equipment, dogs, boats, etc. I believe it would make your magazine more interesting and would help many sportsmen to secure something they want at the right price. What is your opinion?"

We agree that there is a definite possibility that an ad section might create more interest for the magazine, but under the legal requirements governing the publication of a magazine of this type, advertisements are not permissible. Of course, free space for this purpose is out of the question as the demands quite probably would be more than we could handle.

Mr. J. H. R. of Wadesboro, N. C. asks, "How many different kinds of catfish are found in North Carolina and what are their chief distinguishing features?"

To the best of my sources of information there are three members of the catfish family in North Carolina. These are: the white and channel catfish and the yellow bullhead. The tail of the white and channel cat is deeply notched or forked while the tail of the yellow bullhead is square with little or no notch. It addition, the white cat has 19 to 21 rays in the anal fin and the white cat has 25 to 29 rays in the anal fin.

Mr. R. H. W., Jr. of North Wilkesboro, N. C. writes the following interesting letter: "I long ago tired of trying to catch my limit every time I went fishing. In the first place, I don't believe neighbors or friends appreciate fish any more if I scale and clean them and to my regret, I have found they don't appreciate them at all if I don't clean them. Fishing is my sport and principal activity and quite often I catch more than I actually need, and as a result I follow the practice of releasing the excess fish. Sometimes the hook is so imbedded that I wonder whether or not the fish will live after I release it. A fellow fisherman suggested that I cut the hook from the leader and release the fish. Is this advisable?"

There are excellent chances that a fish will either disgorge a hook or otherwise dissolve it by action of its body juices.

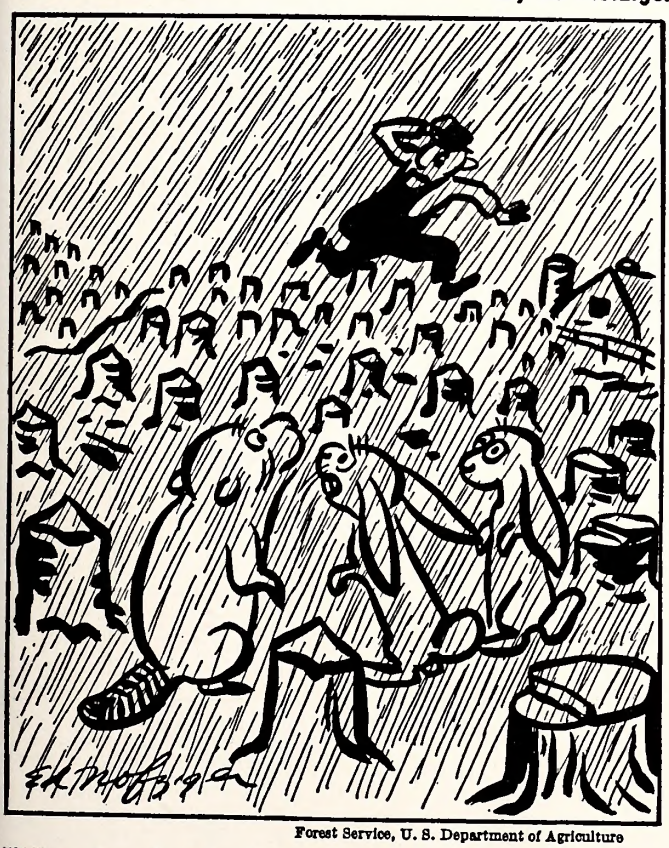
In any event, the possibility of recovery from this sort of treatment is better than from the type of surgery most of us are capable of. Almost all fish will die if the hook is sunk in the roof of the mouth or in the gills.

Mrs. A. H. H. of Murfreesboro, N. C. asks, "Is it true that a purebred female dog might have inferior litters even though she was mated to another purebred, if she previously had a mongrel litter?"

No, this is not true. The quality of each litter is determined by the quality of that particular litter.

In the June issue we printed a letter from an army officer who was sending his copies of WILDLIFE IN NORTH CAROLINA to a friend in East Africa. Mr. C. H. Bradshaw of Swepsonville, N. C., reports that he sent a recent copy, mailing wrapper and all, to Miss Rene Harris, Perth, W. A., Australia. This should top them all as the "down under" country is about as far away from Tarheelia as WILDLIFE can get without meeting itself coming back.

"JOE BEAVER" **By Ed Nofziger**



Forest Service, U. S. Department of Agriculture

"What a farmer! Strips his wood lot and now he can't even get under a tree when it rains."

Porpoise are among the most intelligent of marine mammals. They attack sharks fearlessly but have never been known to harm humans.

(Continued from page 16)

direct result of mild winter weather which permitted the pest to survive far northward of its known infested areas in the Gulf states. The pest according to reports may be found as far north as southern Georgia in most seasons but active cases were found in southern South Carolina during February and March 1949.

Farmers generally used the recommended screwworm Smear No. 62 and obtained good results. Veterinarians were called in to treat many cases but farmers soon learned to watch for infested wounds and treat the cases unless it was in a vital spot. The most difficult cases were those in the naval of new born calves and pigs. The possibility for another bad year is very great since active cases were found in January, February and March in eastern North Carolina. Natural spread by flies and movement of livestock into areas makes the problem a very difficult one to cope with. The screwworm as a livestock pest is one that livestock men dread.

AN ESTIMATION OF SCREWWORM INFESTATION AND CONTROL IN CERTAIN COUNTIES IN NORTH CAROLINA DURING 1949 AS REPORTED BY COUNTY AGENTS IN NOVEMBER

Counties	Pints Smear Used	Cases Reported	Farms Infested	Animals Attacked
Rockingham	12	50	40	75% cattle
Brunswick	100	125	65	95% hogs
Northampton	36	12	12	50% cattle
Mecklenburg	300	500	300	40% hogs
Onslow	2,000	2,200	1,200	80% hogs
Forsyth	50	70	20	90% cattle
Bladen	1,150	8,000	2,500	70% hogs
Guilford	85	200	115	75% cattle
Stanly	200	325	210	50% hogs
Sampson	100	300	50	75% hogs
Pender	400	7,000	1,250	85% hogs
New Hanover	10	45	19	86% hogs
Wayne	5,000	10,000	2,000	70% hogs
Robeson	4,000	5,000	3,500	50% hogs
Columbus	3,000	4,000	2,000	40% hogs
Pitt	200	780	500	50% hogs
Jones	100	250	75	80% hogs
Cumberland	400	1,500	1,000	75% hogs

Nature's Oddities

Fish, like humans, get seasick if left to the mercy of the waves for an extended period.

There is a small plover in Africa which serves as a toothpick for crocodiles. They allow it to enter its mouth unharmed.

Burrowing owls, prairie dogs, and rattlesnakes have been found living in the same dens.

The female nine-banded armadillo normally gives birth to four young, all of the same sex.

How Well Do You Know Your Fish?

(For Identification See Page 14.)

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IN NORTH CAROLINA

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GAME PROTECTORS ON THE AIR

Above: Ace newscaster and special events radioman Phil Ellis interviews pilot B. H. Watts, who flies the Wildlife Resources Commission's patrol plane, and Preston Bagwell, wildlife patrolman. Ellis interviewed the patrolmen and later recorded a two-way shortwave broadcast between the plane and a patrol car on the ground.

Left: One of the Wildlife Resources Commission's patrol cars on the ground as seen from the plane. Number on the car top is for identification when radio contact fails. The combination of a patrol plane and patrol cars equipped with shortwave radios has made going tough for fish and game law violators. The technique is especially valuable in breaking up night deer hunting.

(Photos by Rod Amundson)

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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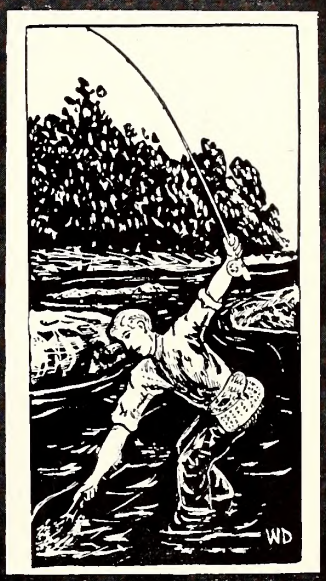

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September 1950 Vol. XIV, No. 9

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
GLORIA MOORE, Circulation
JACK DERMID, Photography

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COVER

Win Donat used oil paints to picture the Florida gallinule, a migratory game bird which frequents Tar Heel coastlands. There is an open season on these birds this fall. Some hunters call them marsh hens.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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LET'S LEARN ABOUT OUR WILDLIFE

The Twentieth of a Series on The Wildlife Species of North Carolina

THE WEASELS

By ROD AMUNDSON

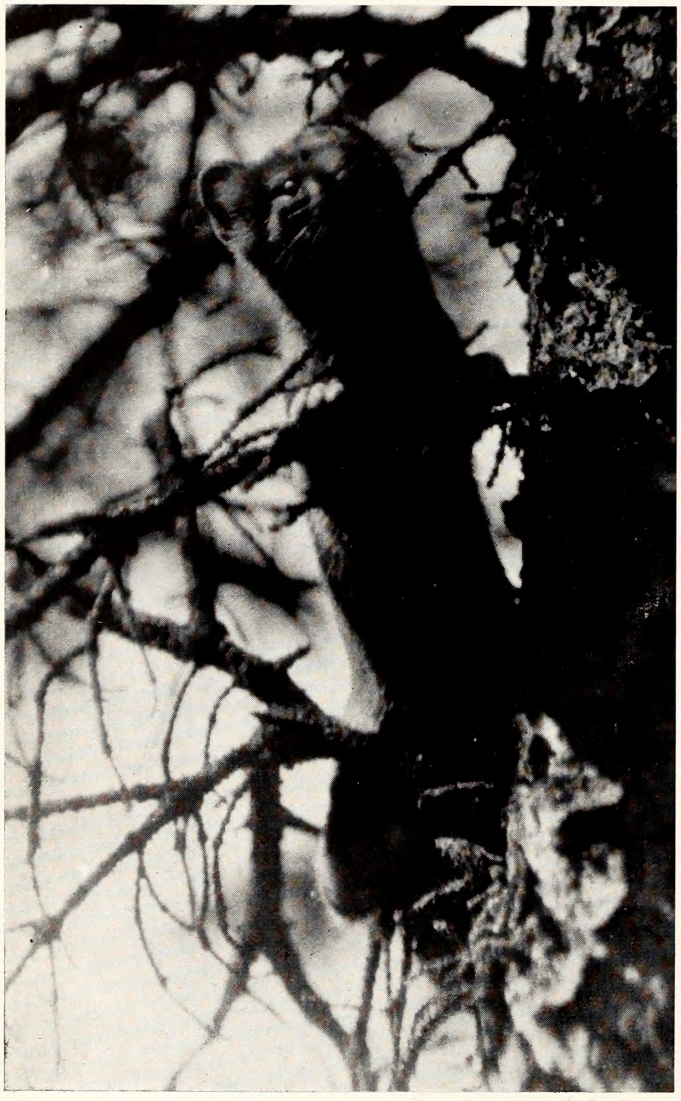


Photo Courtesy U. S. Fish & Wildlife Service

Although weasels are more at home on the ground, they frequently climb trees in search of birds' nests and any other food they may find. Fortunately, weasels are scarce in North Carolina, and thus are not serious predators.

THE best thing to be said about weasels in North Carolina is that they are scarce. Weasels are by far the most bloodthirsty predators on the North American continent. They are one of a very few wild species which kill for the sheer enjoyment of killing.

Weasels and their close relatives have been in demand as fur producers for centuries. In northern Europe they have been sought after during the winter months when their coats have turned white to produce beautiful ermine fur wraps. For hundreds of years ermine has been a mark of royalty, and ermine robes worth fabulous sums have been made to adorn royal shoulders.

The true ermine is a northern European animal, but is very closely related to American species. In the northern part of the United States weasels turn white in the winter months, with the exception of the black tips of their tails. Hence, ermine wraps and ermine-trimmed garments are manufactured in this country from weasels. True ermine must be imported.

Three species of weasels occur in North Carolina. The list includes the Alleghenian Least Weasel, the New York Weasel, and the Southern Weasel. None of the three are anywhere abundant, a situation for which farmers and game breeders are grateful.

Despite the value of their furs, weasels are not protected by law in North Carolina. Other than by deliberate trapping, they are seldom killed except when they have invaded a poultry house and committed mayhem on the barnyard flock.

Despite being vicious killers of game and poultry, weasels have redeeming graces. They are beautiful, graceful animals, and despite their inroads on valuable species, are important to North Carolina agriculture. They help to keep rats and mice from becoming a serious problem to agriculture.

Characteristics

Weasels are an exception to the old cliché that says "good things come in small packages." Weasels are small, but therein ends the pertinence to the cliche.

Since weasels of various species are similar in general appearance, they may be described as a group and specific differences outlined. Altogether there are more than thirty species and subspecies of weasels in this country, plus a sub-genus of black-footed ferrets.

Weasels are small, ranging from about eight inches in the rare Alleghenian Least Weasel, to 16

to 18 inches long in the larger varieties. The body is long and slender, more so than the mink. The neck is long and capped by a small, pointed head with prominent glittering eyes and relatively large ears set close to the skull. The tail is rather short, and invariably black-tipped. The color ranges from a deep rich brown in summer to snow white in the winter for northern or mountain species. The underparts, from chin to flanks, may be a creamy yellow or ochracous or even white. The feet have well

Photo Courtesy U. S. Fish & Wildlife Service

At high altitudes and northern climes, weasels turn snow white in winter, except the tip of their tails. White weasel skins become ermine wraps. The true ermine is a European cousin of the American weasel.

developed claws, and the teeth are well-designed for tearing flesh.

Although the records are not clear, the Alleghenian weasel is probably the only North Carolina species which turns white in the winter, and this only where it exists in regions of considerable snowfall. The New York and Southern weasels are much larger than the Alleghenian, reaching lengths of from 16 to 17 inches. It is doubtful that either of these turn white in winter since North Carolina lies in the southern end of their range.

Weasels are solitary animals, seldom seen together except during the mating season, and when the young are still with their mother. A British species is reputed to form packs of seven or eight in the winter months, and hunt together for food.

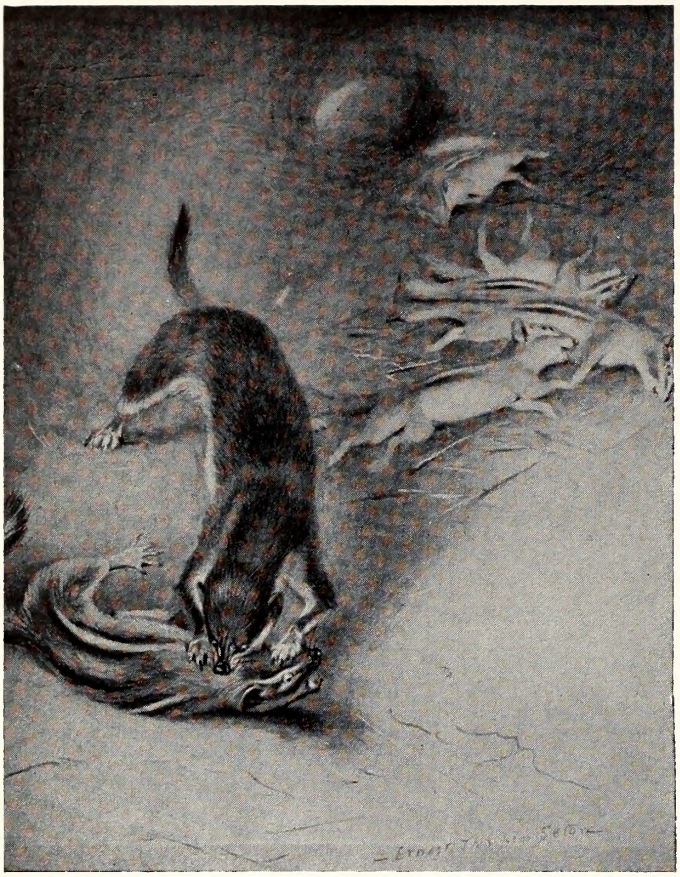
Like all members of their family, (including skunks et al.) weasels are equipped with scent glands. The odor of their musk is sweetly sickening in small doses, and reekingly repulsive in concentrations. Apparently the musk is used more as an attraction or message to others of the kind than as a defense mechanism as is the case with skunks. The musk of weasels will linger in the vicinity of an expulsion for days. Trappers locate weasel territory by detecting the odor of scenting posts.

Food Habits

The food of weasels consists of every living animal that it can attack and subdue. The menu ranges from tiny insects to wild turkeys. Fortunately for the least weasel, it is too small to take important numbers of game species other than their young, and must be content with insects, mice, small birds, birds' eggs, and cotton rats. Larger species, however, have been known to attack and kill adult wild turkeys. Every farmer knows how efficiently they can kill of the contents of a chicken roost in a single night.

It is the food habits of weasels that place them somewhere in the balance between good and bad. They will wreak havoc in the poultry coop, then entirely rid a farmstead of rats and mice. Usually the blood and brains of larger victims constitute the major portion of their diet; yet there is definite evidence of storing food. They may kill a few dozens of baby chicks and store them between the sills under the henhouse floor in a neat pile. The same applies to rats and mice. For some unknown reason, they will pile up dead rats and mice in some corner—far more than they could hope to devour in several weeks. Perhaps it is merely a matter of keeping score on their kill. Many hunters do the same thing!

To obtain their prey, weasels may indulge in subterfuge. Seton tells of the British stoat, a weasel variety, fooling its prey by playfully gamboling about until suspicion was lulled, then springing for the kill. Weasels move with remarkable speed. In fact, nearly everything they do is done with lightning rapidity. Their savage hearts beat so fast that pulsebeats may be observed in a resting animal. They are seldom seen in slow movement. They attack their prey with vicious ferocity, kill it quickly, lap the blood or eat the brains, and scurry away in quest of the next victim. To use the vernacular, weasels are nasty little demons.



Weasels are wanton killers, apparently killing for pleasure. This illustration by Ernest Thompson Seton shows a weasel killing an entire family of chipmunks. Weasels sometimes store away the bodies of birds and animals they kill, but rarely come back to eat them.

Mating

Weasels bear their young after a 40-day gestation in litters of from four to eight. The youngsters are blind at birth, and see daylight for the first time after about nine days. In North Carolina, the mating season occurs early in the spring, perhaps in late February or early March. Actually, little is known of the mating activity of weasels. These diminutive killers are as elusive as they are vicious, and direct observation of their daily life is indeed difficult.

The dens of weasels may be a pile of stone, a crany in a stone wall or cliff, an abandoned rat den, or any other secluded recess which will afford protection and shelter for the family. Where ready-made dens cannot be requisitioned, weasels may dig elaborate dens with a labyrinth of connecting tunnels and a chamber for bearing young and storing trophies of their wanton killing.

In rare instances the male parent has been known to aid with the rearing of the family, and both parents will defend their household with more vigor (if possible) than attends their bloodthirsty predations. Family life resembles that of many other small animals. The young are playful and engage in impromptu games. The lust for blood seems instinctive, for young weasels learn to hunt and kill at an early age.

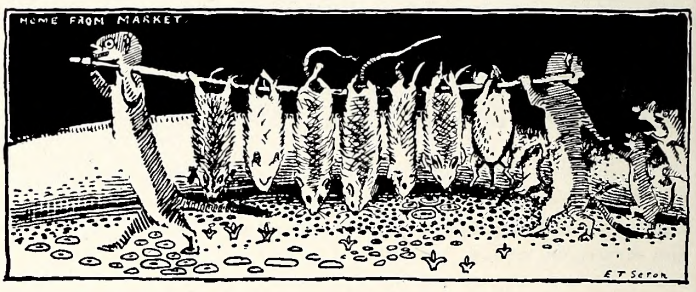
Enemies

As might be expected of a tribe so warlike, weasels have no enemies other than larger and more powerful predators and routine disease and parasites. Great horned owls are capable of taking weasels, and larger relatives, such as mink, may take a toll. Foxes kill weasels, and it may be assumed that wildcats do so also. But it is certain that few predators are quick enough or skillful enough to hunt and kill weasels with anything like success. It is likely that weasels are preyed upon only by hunger-driven carnivores. I have seen a farm dog vomit violently for half an hour after killing a weasel cornered in a henhouse. Apparently the musk was too much for even a dog's stomach.

Weasels are immaculate in habit, and wash themselves thoroughly in pools or streams. Thus, it is likely that fleas and lice give them little trouble. Almost nothing is known with regard to disease in weasels.

Economic Value

Since weasels are not protected by North Carolina law, their control, or lack of control, becomes an individual proposition. On one side of the ledger are heaps of rats and mice which are better, for agriculture, dead than alive. On the other side are birds, birds' eggs, game and poultry. No doubt most farmers prefer to leave mousing and ratting to their housecats, and keep weasels out of the henhouse.



With the Ruffed Grouse, to be discussed next fall, most of the import wildlife species in North Carolina will have been covered. Next will be a series on the more important fresh water fish.

Our apologies to C. W. Schwartz, who does photography for the Missouri Conservationist, and to Rex Gary Schmidt, now with the U. S. Fish and Wildlife Service. In last month's center spread we erroneously and unintentionally credited the snake photos to Schmidt instead of to Schwartz.

—Ed.

FOOD from the SEA

By J. L. MORRISON

University of North Carolina

(Photos Courtesy N. C. News Bureau)

THERE IS FOOD FOR THOUGHT IN THIS — THINGS MAY BE BETTER THAN WE THINK

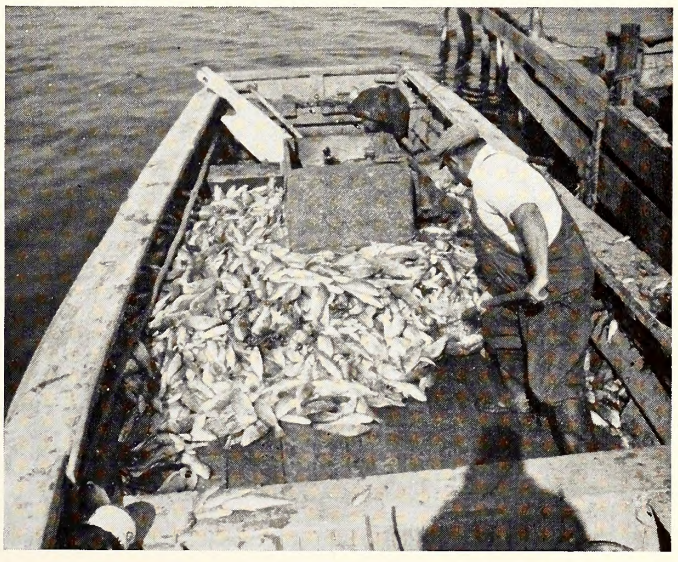
MEN of science, thinking about the approach to the 2½ billion mark in the world's population, cast an anxious eye at the world's fisheries and agree that they must be operated more efficiently in order to help solve the world's food problems. But it is generally overlooked that their inefficiency is really self-imposed. Why do men thus limit their food resources? Because of the widespread, and erroneous, assumption that fishery problems are mainly biological in nature. This fallacy and an exposition of the economic factors involved in the production of food fishes is the latest—and perhaps most challenging—contribution to the field of fisheries research by Dr. Harden F. Taylor, research professor at the University of North Carolina.

Dr. Taylor's treatment of this hitherto undeveloped subject is possibly the most striking thesis of an important new work, "Survey of Marine Fisheries of North Carolina," written by Dr. Taylor and a staff of associates and to be published late in 1950 by the University of North Carolina Press. For although the book's economic section originally was intended as a study of the fisheries of North Carolina, Dr. Taylor quickly determined to expand it in order to avoid the pitfall of superficiality and to consider the fisheries of the entire country and even, to an extent, of the world. The result, in the judgment of the eminent zoologist, Dr. Robert E. Coker, is that "such an assembly of facts concerning fisheries, with basic analyses and interpretations, has never hitherto been available."

The book's study of general fishery economics appears to be in good hands, for Dr. Taylor is a scientist who has also made his mark on the business world. Furthermore, he has been known to address meetings of English teachers on "precision in Writing," illustrating with "horrors" culled from scientific articles and government bulletins. From his start with the Bureau of Fisheries Dr. Taylor moved to the commercial firm, Atlantic Coast Fisheries, where, as director of the company's research laboratory and later as vice-president in charge of scientific research, he was largely responsible for introducing revolutionary techniques in the packaging and distribution of sea foods. From 1930 to 1945 he served as president of this corporation and, upon his retirement, rejoined his old colleague, Dr. R. E. Coker of the University of North Carolina in the new Survey of Marine Fisheries.

To begin with, Dr. Taylor points out that the number of acres of arable land and of fishable bottoms in the United States are just about equal at some 350 million acres each, and yet fisheries supply less than one per cent of the nation's food. Furthermore, "the fisheries deplete no natural resources, they automatically replenish themselves, and what they produce is a net return of wealth to the land from which it was originally lost." Whereas it is necessary to maintain and fertilize agricultural soil, the basic source of the fertility of the seas—in the practical sense—is inexhaustible.

The basic fallacy lying behind all fisheries legislation, according to Dr. Taylor, is the assumption that fisheries are a limited natural resource in danger of being depleted. Proceeding from this false premise, therefore, there have emerged a welter of illogical and contradictory laws, the general purport of which is to enforce inefficiency on commercial fisheries which are competing with agriculture.



"The basic fallacy . . . is the assumption that fisheries are a limited resource and in danger of being depleted." These are croaker, spots, and sea trout, all food species.

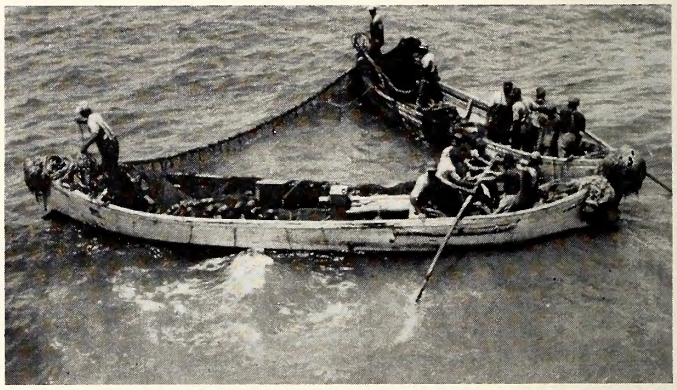
Seining in the surf on the outer banks. Many game species are taken this way. The question is: does this netting ruin sport fishing?

For instance, California limits the percentage of sardine catch that can be manufactured into fish meal and oil, North Carolina prohibits the use of a purse seine in catching food fish, and many other states impose restrictions on the use of nets, traps and other "too efficient" devices. Others prohibit night and Sunday fishing regardless of the natural movements of fish. In any case, there is widespread ignorance of the fact that regulatory measures which impose inefficiency really operate against full utilization of the resources of the sea.

For why should the fishing community be immune to the operation of the normal laws of supply and demand? Will the fishermen be happy if there is a greater abundance of fish generally or even of any one species? No, not any more than is the farmer when he is faced with a bumper crop at a time when the market price for that crop is depressed. Will fishermen continue to overproduce a certain food fish in spite of the fact that the market is glutted? Certainly not. Yet that is the presumption by lay legislators who appear to feel that fishermen are in business for their health, blithely taking fish from the ocean when nobody will buy them. And of course much of the contradictory legislation comes at the behest of fishermen themselves who operate in a welter of relative ignorance, rivalries, fears, and jealousies in what is at best a "sick" industry.

Dr. Taylor insists: "The sea is so vast and its water is in such continuous circulation that man can do nothing by way of addition or subtraction to affect in the slightest detectable degree the chemical fertility or the production of basic vegetation except locally and temporarily and on a very small scale." That is the basic and misunderstood fact underlying the world's supply of food from the sea. True, the local supply of fishes may appear to show alarming signs of depletion and cause great local consternation, but these signs are viewed on a small scale over short periods of time when the fluctuations of weather, erratic markets, and natural cycles of fish population make their influence felt. On the other hand, Dr. Taylor has been able to observe the total picture by way of statistics in larger perspective of time and place, and his observation is that the economic behavior of fisheries corresponds with that of other businesses. This statistical "long view" is an application of the truism: "large scale order rests on small scale disorder."

In the 19th century, many predictions were made, some of them by eminent fisheries authorities, of the approaching "depletion" of the fisheries by "over-fishing." The Survey proceeds, systematically, to demolish them all with statistical evidence. For instance, with the tremendous growth in the popu-



353,461,000 menhaden were taken from Tar Heel waters from July 1, 1949 and June 30, 1950. They are made into oils and animal protein foods. Menhaden feed on plankton, and the supply is almost inexhaustible.

lation of the United States the per capita consumption of fish has remained about constant. Yet the production of fish has easily kept pace with this increase of population and the statistics are there to prove it. Again, if one plots on a graph the curve of industrial production and that of fish production during an entire business cycle, it is apparent that the curves of activity are identical. Still again, the same correlation is observable between the national income and the money value of fish produced. Far from being depleted, the fisheries of the United States give abundant evidence of supplying sea food in the quantity the American people desire, as evidenced by their willingness to pay for such food. It is perfectly simple to prove, Dr. Taylor maintains—and he does so in his book—that the volume of fish actually produced in the United States is determined not by biological factors, but by economic ones.

Now fishing is an extractive industry, but a "peculiar" one. In all the three extractive industries other than fishing—agriculture, mining and forestry —there are such things as property rights in the sources. That is one factor limiting competition; and another is the need for "an amount of capital at least equal to the value of the land." Thus there is a reasonable expectation of profit.

On the other hand, Dr. Taylor says, the main characteristic which distinguishes fishing from all other industries, both manufacturing and extractive, is the common ownership of the raw materials and the sharing of their value, i.e., granting each fisherman compensation, not by fixed wages, but by a share in the catch. Further, where the farmer is tied to the land by reason of his ownership and investment in it, the fisherman is possessed of portable gear and can make quick decisions to fish more or less, to fish here or elsewhere or not at all. "As a consequence of this fact, the fisheries are highly sensitive and quickly responsive to the forces of supply and demand, inflation and deflation." If the market price for haddock is low, the fisherman can turn around and apply himself to catching cod.

By contrast with fisheries, the other extractive industries have benefited greatly through government promotion of them as basic sources of wealth to be developed and expanded in the public interest. But there is that essential contradiction in "conserving" the food of the seas. One state will set itself the task of "protecting" gray trout in spite of the fact that it is also trying to foster an infant shrimp industry. Gray trout prey upon shrimp and then the state finds itself protecting both trout and shrimp, one to eat the other. The fact is that the overall quantity of food fishes that can be sustained by the ocean's vegetation seems to remain about constant; variations in abundance and scarcity of particular species are generally compensated by opposite variations in other species, and the overall production is determined largely by what the public taste prefers.

Nineteenth century considerations of fisheries gave little thought to how prices would behave in the event of relative scarcity and abundance of various species. It was thought then that the only method of promoting the welfare of fishermen was to increase the number of certain desirable species by hatching eggs. Today hatching appears pretty well discredited except for the relatively minor task of stocking small land-locked waters, and the fact is that sea fisheries have continued to increase in yield. As the demand grew, so did the supply to meet it.

"Up to now," Dr. Taylor says, "the quantitative science of fisheries production has concerned itself almost wholly with the separate measurement of particular species and has tacitly assumed that the whole is the sum of the parts in the sense that if each species of a regional fishery could be 'managed,' conserved, or increased, one by one, the total would or could be correspondingly enhanced. Little attention has been paid to this or any other regional fishery as a community of many rivaling, competing, predatory, and mutually destructive species wherein the rise of one is inseparably associated with the decline of others so that the whole behaves as a body and in a manner entirely different from that of any of the parts."

With such a challenging thesis, it is easy to see how Dr. Coker, in his foreword, writes: "It is to be expected, indeed it is to be hoped, that that report will be provocative of wide discussion." There should be no question, however, as to the enduring value of the data assembled in the "Survey." It would seem fair to say that the authors of this Survey will have made a striking contribution to the science of marine biology and an important step in a better public understanding of the extraction of food products of the seas.

What is the next step? What are the legislative implications of Dr. Taylor's work? That remains for someone properly qualified by legal training and experience to take up where Dr. Taylor leaves off, and the preparation of an additional section on public regulation and administration remains a definite goal of the Survey. As a matter of fact, the

(Continued on page 21)

Besides food, the sea produces sport. Here is an amberjack about to be gaffed and taken into the boat. Many sports fishermen believe that commercial netting ruins sport fishing.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

AT PRESS TIME THE DINGELL BILL, WHICH WILL DO FOR FISH MANAGEMENT WHAT THE PITTMAN-ROBERTSON ACT IS DOING FOR UPLAND GAME, HAD BEEN PASSED BY BOTH HOUSES OF CONGRESS AND WAS ON PRESIDENT TRUMAN'S DESK AWAITING FINAL ACTION. INFORMED SOURCES BELIEVE THE PRESIDENT WILL SIGN THE BILL INTO LAW THIS YEAR, ALTHOUGH HE VETOED A SIMILAR BILL DURING THE LAST CONGRESS.

THE DINGELL BILL WOULD DIVERT FUNDS FROM AN EXCISE TAX WHICH IS ALREADY BEING COLLECTED BY THE FEDERAL GOVERNMENT ON FISHING TACKLE BACK TO THE VARIOUS STATES FOR THE IMPROVEMENT OF FISHING. MONEY COMING BACK TO NORTH CAROLINA THROUGH THIS ACT WILL PROBABLY BE IN PROPORTION TO THE NUMBER OF FISHING LICENSES SOLD EACH YEAR. MANY CONSERVATIONISTS CONSIDER THIS ASPECT OF THE LEGISLATION AN IMPORTANT ARGUMENT FOR SOMETHING LIKE A UNIVERSAL FISHING LICENSE REQUIRING ALL PERSONS WHO FISH FOR GAME FISH TO BUY A LICENSE TO DO SO. THE INCREASED NUMBER OF LICENSES SOLD WOULD MEAN MORE MONEY RETURNED TO THE STATE FROM THE FEDERAL TREASURY.

RALPH C. CONWAY, FORMERLY WITH THE WISCONSIN CONSERVATION DEPARTMENT, HAS BEEN EMPLOYED BY THE N. C. WILDLIFE RESOURCES COMMISSION TO SERVE AS LEADER OF THE COMMISSION'S UPLAND GAME RESTORATION PROJECT. CONWAY WILL SUPERVISE THE ACTIVITIES OF FIELD BIOLOGISTS IN EACH OF THE COMMISSION'S NINE GEOGRAPHICAL DISTRICTS, WITH HEADQUARTERS IN RALEIGH. CONWAY HAS BEEN ACTIVE IN WILDLIFE CONSERVATION AND GAME MANAGEMENT WORK FOR OVER FIFTEEN YEARS, AND HIS SERVICES WILL BE A VALUABLE ADDITION TO THE WILDLIFE COMMISSION'S PROGRAM.

SPECIAL RULES AND REGULATIONS ON ORGANIZED HUNTS IN NATIONAL FORESTS AND WILDLIFE MANAGEMENT AREAS WERE ESTABLISHED AT A MEETING OF FOREST SERVICE AND WILDLIFE OFFICIALS IN ASHEVILLE RECENTLY. THE REGULATIONS ARE BEING PUBLISHED AND WILL BE AVAILABLE SOON. PERSONS INTERESTED IN THESE HUNTS MAY GET THE RULES, REGULATIONS, AND A SCHEDULE OF DATES BY WRITING TO THE WILDLIFE RESOURCES COMMISSION, BO7 2919, RALEIGH. IT IS EXPECTED THAT A NEW SYSTEM OF HANDLING SPECIAL PERMITS FOR THESE HUNTS WILL SAVE TIME AND MISUNDERSTANDING. AS IN YEARS PAST, DRAWINGS WILL BE HELD TO DETERMINE SUCCESSFUL APPLICANTS.

W. G. CAHOON, MANAGER OF LAKE MATTAMUSKEET NATIONAL WATERFOWL REFUGE HAS REPORTED THE BEST FISHING IN LAKE MATTAMUSKEET IN TEN YEARS. SOME OF THE FINEST WHITE PERCH FISHING IN THE STATE MAY BE HAD AT MATTAMUSKEET, AND LARGEMOUTH BLACK BASS ARE HITTING BETTER THAN IN THE PAST SEVERAL YEARS. LAST YEAR 56,000 LARGEMOUTH FINGERLINGS WERE STOCKED IN THE LAKE, AND ARE NOW REACHING THE TEN-INCH CLASS.

THE GENERAL OUTLOOK FOR THE COMING FALL AND WINTER IS GOOD THROUGHOUT THE ENTIRE STATE WITH A FEW LOCAL EXCEPTIONS. A SURVEY OF GAME PROTECTORS AND FIELD BIOLOGISTS DISCLOSED ONLY MINOR DAMAGE TO THE QUAIL HATCH DUE TO HEAVY RAINS, AND THIS DAMAGE ONLY IN TWO SMALL LOCALITIES. DESPITE A LATE FROST SQUIRREL MAST IS ABUNDANT. IN PART OF THE PIEDMONT COONS ARE SCARCE, AND COON HUNTING RESTRICTED. THIS SHORTAGE OF COONS IS BEING ALLEVIATED BY THE WILDLIFE COMMISSION'S PROGRAM OF TRAPPING LIVE COONS IN AREAS OF OVER-ABUNDANCE AND TRANSPORTING THEM TO LOCALITIES WHERE COONS ARE SCARCE. AT PRESS TIME OFFICIAL WORD OF WATERFOWL REGULATIONS HAD NOT BEEN RECEIVED FROM WASHINGTON, BUT WATERFOWL HUNTERS SHOULD EXPECT A SEASON AND BAG VERY SIMILAR TO THAT OF LAST YEAR.

DOVE HUNTERS ARE REMINDED OF THE IMPORTANCE OF TURNING IN BANDS FOUND ON THE LEGS OF BAGGED BIRDS. INFORMATION FROM THESE BANDS IS ESSENTIAL TO THE SUCCESS OF A COOPERATIVE DOVE MANAGEMENT PROGRAM BEING CARRIED ON BY SOUTHEASTERN STATES. SEND THE BANDS TO THE WILDLIFE RESOURCES COMMISSION. THEY WILL BE FORWARDED TO THE FISH AND WILDLIFE SERVICE. PERSONS COOPERATING WILL RECEIVE AN ACCOUNT OF WHERE THE DOVE WAS TRAPPED AND BANDED, PLUS OTHER PERTINENT INFORMATION. BANDS FOUND ON BARNYARD DOVES ARE NOT OFFICIAL AS FAR AS STATE AND FEDERAL GOVERNMENTS ARE CONCERNED. PIGEONS WITH BANDS ON THEIR LEGS PROBABLY ARE PARTICIPANTS IN PIGEON RACES, A POPULAR INTERSTATE SPORT.

SCIENCE COMES TO LIFE
at Chapel Hill

By MRS. RICHARD L. WEAVER
Seventh Grade Science Teacher, Chapel Hill

(See Pages 12 and 13 for Illustrations)

THE culminating activity for the science projects of our school this year was our Science Fair. The Elementary School at Chapel Hill, North Carolina has seventeen classes in grades one through eight. All grades cooperated in the Fair.

We keenly enjoyed educational, intellectual and democratic pleasures while we were at work on our Fair. The procedures are the reverse of the usual classroom ones. Children came to their teachers saying, "*I* want to take home a book about . . ."; and "Will you come help us with . . ."; and "I just have to have this finished"; and "*We* have decided to . . ." Several people asked what we thought the most outstanding outcome of the project was. We replied: "We are most pleased with the excellent way in which our students have taken responsibilities. They have done original thinking and planning, then have carried their projects through to finish them for the exhibit."

Children who usually were apathetic toward school did excellent projects. Students were given the responsibility of choosing what they would like to do or to exhibit in the Fair. Thus we had a range of ideas coming from all the children of the school and from parents, not from the teachers only. Teachers assisted students in getting materials, in finding information and in making helpful suggestions. Students had posts during the Fair, at the various exhibits, both to explain to guests and to care for the properties exhibited.

Most of the teachers of the school have used the Unit method of teaching Science. Materials developed during Units were saved for the Fair. For example, the fourth grade had studied electricity. They had a room bulletin board of materials collected during the unit. These were arranged in the hall for the Fair. One item was a mounted collection of materials which were good conductors and others which were insulators or non-conductors. The seventh and eighth grade students chose units in groups or as individuals. These, based on deep individual and group interests were most productive of excellent learnings. Four seventh grade girls worked on "Physiology and Health". They did a cooperative notebook of stories about the body plus thirty posters about parts of the body. They helped choose the area for their display and one of the mothers came to school to help them arrange their materials.

The halls of all three floors of the school were used for the exhibits. Exhibits were arranged by Science Units. We had sections for Physiology and Health, Microscope Studies, Animal Life, Insects, Electricity, Astronomy, Spiders, Trees, Wildflowers, Birds, Shells, Marine Life, Foods, Weather, Butterflies, Rocks and Minerals, Seedlings, Pre-historic Life, Heat, Chemistry, Textiles, Air, Soil, Milk, The Brain, Water, and an Automobile Motor.

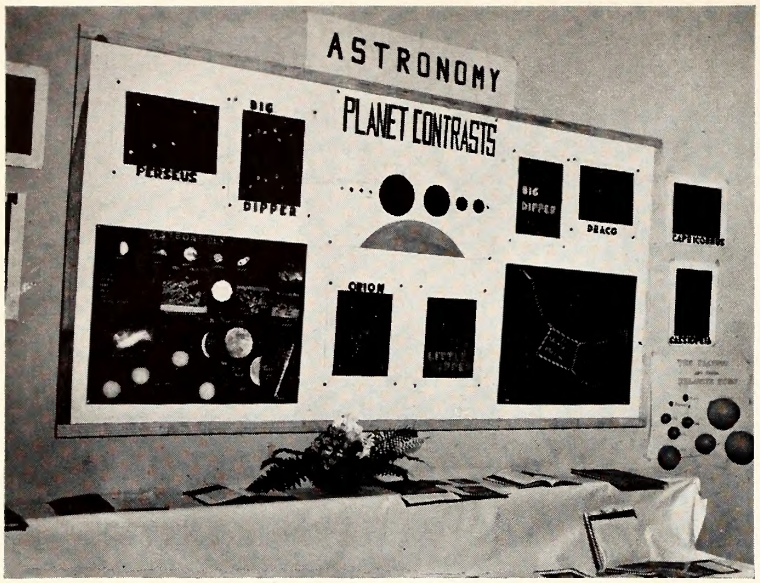
In the Animal Life Exhibit, we had posters, terreria and aquaria containing various local animals, also labeled preserved specimens. The insect exhibit centered around an ant display. The ant house consisted of a frame holding two panes of glass about 16 by 20 inches, placed upright with about an inch and a half between them. This space was filled with soil and an ant family with a queen was established in it. Then the glass sides were covered with paper for a few days after which the tunnels could be observed. Many students visited the taxidermy shop of the wife of the District Fish and Game Protector, who loaned us many specimens for our exhibit.

There was a case containing a bird egg and nest, a set of bird traps and banding equipment brought by one of our local bird banders, bird houses and feeders, two electric bird charts for identification games, plus drawings and posters. Also a set of kodachromes in a framing viewer which was set on a lamp stand.

Real preserved butterflies were pinned on large posters of appropriate local flower backgrounds. Students identified, typed stories, and mounted shell collections. Paper cups were saved from the cafeteria, washed, and used by the seventh and eighth graders who planted one lima bean and one corn seed in each, to compare the growth of mono and dicotyledons. These were planted ten days before the Fair so as to show the various stages of growth for the exhibit.

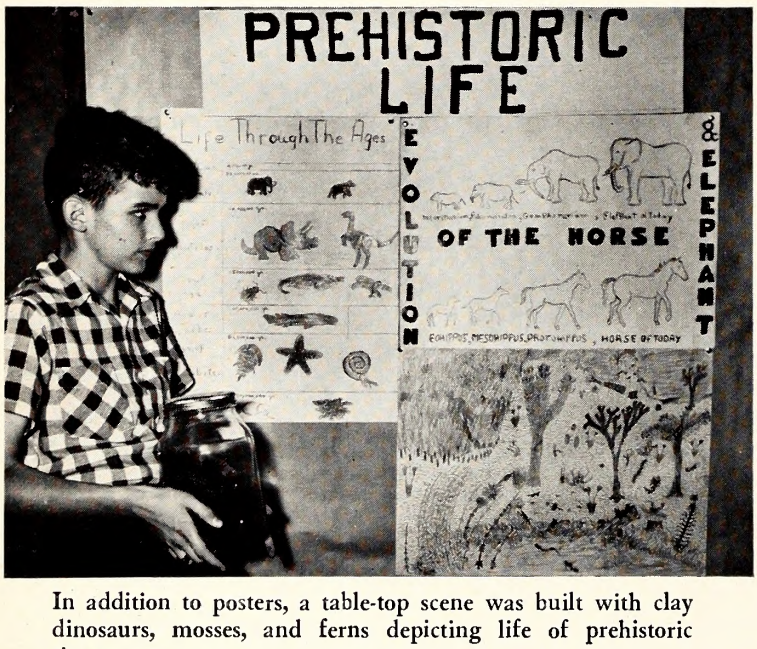
A card-table was used for a scene depicting the flora and fauna of prehistoric times. Screening was used to build the terrain. This was spread with paste, then covered with sand and stones; moss and ferns were then planted. Clay models of dinosaurs were placed in appropriate habitats. Another clay

(Continued on page 21)



One ingenious student made a poster for the astronomy exhibit with balloons blown to show the relative size of the planets.

Scientific experiments dealing with air, ... continuously during the fair.



In addition to posters, a table-top scene was built with clay dinosaurs, mosses, and ferns depicting life of prehistoric times.

SCIENCE C...
at C...

The Elementary School at ... Chapel Hill ended the school ... year with a big event: THE ... SCIENCE FAIR.

Seventeen classes, grades one ... to eight, cooperated to produce ... a successful fair, which was ... novel in that the students themselves did most of the thinking, ... planning, and work. It is signifi-

For a marine display, students identified and mounted shells. Fourth graders were inspired by a preserved octopus to build a clay exhibit.

at, foods, and weather were performed

Posters, live animals of local origin, and preserved specimens were combined to form an effective animal-life exhibit.

ES TO LIFE

Hill

cant, then, that fifteen of the wenty-five exhibits represented subjects closely akin to our natural resources, for these youngsters will be the sportsmen of the future.

For complete details see Mrs. Richard Weaver's article on page 11.

Seventh and eighth grade students planted corn and lima beans to compare the growth of mono and dicotyledons.

Photos By Margaret Fisler

Bird life rated an elaborate display which included two electric bird charts for identification games.

GETTING The ANSWERS

TO NORTH CAROLINA'S MOURNING DOVE PROBLEMS

By DON ALLISON

Project Leader
P. R. Mourning Dove Investigation

Southeastern States Are Cooperating On An Important Problem

This dove nest is more elaborate than the usual pile of sticks. Doves almost always lay two eggs in nests in every state in the union.

IN the southeastern states where dove hunting is a major sport there has been much controversy over the dove hunting regulations as set forth each year by the Fish and Wildlife Service. Arguments over opening dates of the shooting season and the length of seasons in different areas, conflicting demands, and dissatisfaction in the various states led finally to a resolution by the Southeastern Association of Fish and Game Commissioners that dove management should be placed on a factual basis through coordinated research. As a result, a cooperative study of the mourning dove in the southeastern United States was initiated in 1948 under the Pittman-Robertson Federal Aid to Wildlife program and is now under way in 10 of the southeastern states. Other cooperating agencies are the United States Fish and Wildlife Service and the Wildlife Management Institute.

Our knowledge of the mourning dove is very limited for a game bird of such wide distribution and hunting popularity. The mourning dove is the only game bird that breeds in every state of the Union. Previous studies have been made, but information is still insufficient even to determine the proper hunting regulations.

The study in each state will extend over a 3½ year period. Each state is following the same work plan and proceeding along the same lines so that the information obtained will be comparable between states. Sensible hunting regulations and other management practices can then be worked out on a regional basis.

The study here in North Carolina has been in progress a little over one year. This article is meant to give you a general idea of the project, to explain some of the methods used, and to bring out a few interesting facts uncovered so far.

Through trapping and banding we are obtaining factual information on movements of doves within the state as well as to and from the state. To date 1,222 doves have been trapped. Recaptures of doves for the second or more times have totaled 274. The time interval from the original banding for these recaptured birds has varied from one-half to 260 days. In addition, twelve band returns have been obtained from birds shot during the hunting season. The 12 trapping stations which have been established so far are scattered over the state in the Mountain, Piedmont, and Coastal Plains region.

Hunters may help in this phase of the study by sending in bands from birds found dead or shot during the open season, and by requesting others to do the same. For some reason some people seem to be afraid to turn in bands, while others lay them away and forget about them or lose them. Others just do not bother to send them in. If it were realized that valuable information is obtained from returned bands, and the work and expense involved in getting the band on the bird's leg, more bands would be returned. No matter how many birds are banded in this cooperative study, the work will yield little information unless hunters and other interested parties cooperate by returning bands. Through band returns such information as length of life, migration routes, times of migration, and distance traveled can be obtained as well as an answer to the controversial issue as to whether birds are killed mostly in the states where they are raised or in other states.

If you shoot a dove with a band on its leg, or if you happen to find a dead dove which has such a band, flatten out the band and send it in, together with the date and location where taken, to the United States Fish and Wildlife Service, Washington, D. C. If you prefer, send it to the Wildlife Resources Commission, Raleigh, North Carolina, and it

will be sent to the Fish and Wildlife Service which keeps records of all birds banded in all states. You will receive a notice from them telling you the history of the bird.

One of the objectives of the project is to estimate dove populations and relate them to various seasons of the year and various sections of the state. Last winter, during the week of February 6-12, a census was taken of North Carolina doves. This was accomplished by the game protectors in each county making a road count in their respective counties on each of three days. This information was tabulated and calculated to obtain an estimate of the number of doves present in each major region and in the state as a whole. The results of this census showed that approximately 257,000 doves were present in the state during this week, distributed as follows: Mountain Region, 15,000; Piedmont Region, 204,000, and Coastal Plains Region, 38,000. Annual inventories of this type will eventually give a picture of the trend taking place from year to year and will also give the percentage of decrease or increase in the over-all population.

Determining the breeding population present during the spring and summer months is being accomplished by the use of representative study areas selected in different land types of the state. Periodic censuses were made on these areas during the peak nesting months of April, May and June, to obtain the number of doves present on each area. This information will be applied to the total area of each land type and eventually, after the factors and variables that affect breeding populations are worked out, applied to obtain an estimate of the total breeding population and number of doves raised in North Carolina.

By studying information obtained on movements and distribution of doves and also by observations in the field, we hope to determine whether the causes of movements and differences in distribution of doves relate to food conditions, weather, shooting, or other factors.

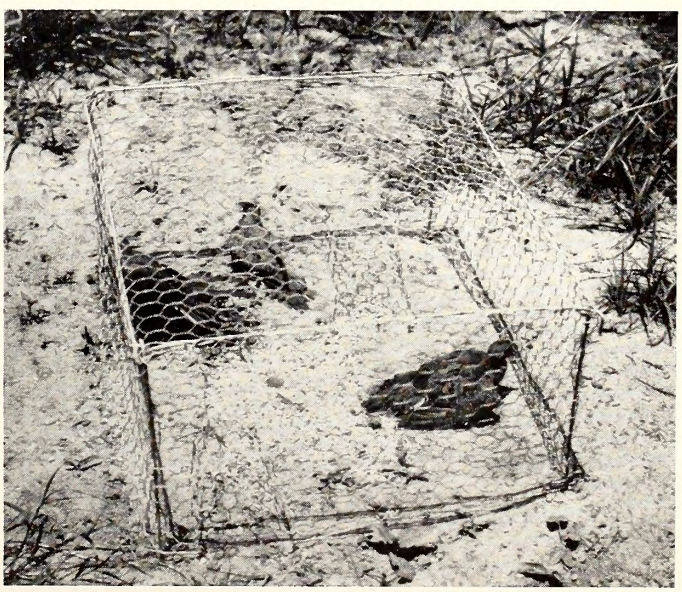
A great deal of ammunition is burned up each year in hunting doves. If you have ever seen a good dove hunt, you know that a great many birds can be killed in a short time and that for each bird killed an average of about four or five shells are fired. Probably the main reason for most dove hunting is the amount of shooting it affords. Doves are difficult targets.

How soon can shooting begin in the fall without serious consequences to the dove population? The majority of sportsmen in southern states want to shoot doves during the month of September. Would it be better to delay the opening date until the young birds have reached adult size? These are problems for which we need facts to answer. This is the reason for our annual check of doves in hunter's bags. In many counties of the state during the past two years 16 Wildlife Resources biologists checked hunter's bags during the first few days of the opening season in September. Game Protectors cooperated by helping the biologists to locate dove hunts. Dove hunters cooperated by allowing the biologists to examine the doves they had shot.

Examination of the plumage determined that of 2,377 doves killed in 48 counties during two seasons, over 72 percent were young birds. Examination of the crops determined that 11 percent of the adult birds killed were still nesting. Swollen glands in the crops meant the birds were feeding young in the nest. The average man hunted 2.4 hours and bagged an average of 4.3 birds. The crippling loss was 28.1 percent. With this information, together with the number of dove hunters in the state, it was possible to estimate the statistical kill in the state as 52,053 doves, of which 40,635 were bagged and 11,418 crippled.

The crippling loss was high due to poor marksmanship, type of fields in which birds were shot down, and the rare use of dogs for retrieving. On the second day of the season, and thereafter, many doves brought down by hunters are frequently thrown away because of previous wounds which had turned green over an area around the embedded shot.

The reaction of doves to heavy gun pressure on various shooting fields is very similar and follows a very definite progressive pattern. Hunting is good throughout the first day. The doves become confused but keep coming in to the feeding field, returning over the hunters regularly and persistently throughout the shooting hours. Limits are often killed within one-half to one hour on the best fields. On the second day hunting is still good and may attract about an equal number of hunters. Kills, however, while still high may become greatly re-



For dove studies, birds are trapped in wire traps such as this, so that they may be banded and released again.

Banding doves is important to studying their migration. Hunters should always turn these bands in to wildlife authorities so that data will be complete.

duced as compared to the first day. A longer time is required to kill fewer birds as the flocks are broken up and come into the fields later in the day. By the third day birds come in to the feeding fields mostly as singles, twos and threes. They are wild now, and fly high. Few come into the fields until almost sundown, resulting in very few being killed and greatly reduced enthusiasm on the part of the hunter. Kills are lower after the first two or three days as there are not enough hunters present on the shooting fields to keep the birds moving. This further discourages the few remaining hunters. The majority of the flock present on opening day may sometimes leave the general area. More often the birds have merely changed their feeding location within the area. In many instances the flock is found feeding the original field a few days after the hunters give up, returning daily until they migrate.

While doves are still nesting late in September, they also start in early in the spring. Evidence obtained thus far indicates mating activities begin as early as the first week of January in the Coastal Plains region and the nesting beginning as early as the last week of January. However, the commencement of breeding activities becomes progressively later westward across the State and nesting by the majority of doves is not well under way until the middle of April. By the middle of May, flocking of young birds becomes apparent in the Coastal Plains and eastern Piedmont regions.

We seldom, if ever, think of doves as causing damage. The waste grain left in the fields after harvesting operations and eaten by the doves along with numerous insect pests can hardly be called injurious. However, one interesting and unusual case of damage by doves was investigated during this study. The damage occurred at a large poultry farm where a large concentration of doves was feeding. The chickens, which were raised to obtain hatching eggs, were on range with scattered range houses for protection. Surprisingly, the major damage was not due to the amount of chicken feed consumed by the doves, but rather it was caused by small flocks of doves flying over and alighting between the shelters on the chicken range. This frightened and excited the chickens, causing them to run and to remain in the shelters, which interrupted their feeding and exercising to a considerable extent. Apparently the chickens were afraid of the doves coming after them in the manner of hawks.

Very little is known about diseases which affect doves. The occurrence of a protozoic disease in the dove in North Carolina was discovered in August, 1949, as one of the activities of the project. This was reported in the May, 1950, issue of *Wildlife In North Carolina*. More recently, in June, 1950, a diseased condition was discovered in two doves trapped in Wake County. Diagnosis in the poultry disease laboratory at State College revealed that a large swelling in the roof of the mouth was caused by pus formed as a result of a spreading infection which originated in the respiratory tract, probably in the sinuses. Due to the swelling, the food tract was almost completely closed off and the head was partially bare of feathers. The swelling would have caused death by starvation in a short time. Several reports from different sections of North Carolina of doves found dead or in a dying condition with the crop full of grain may be attributed to this diseased condition. Reports from several other southern states of doves dying in good numbers from unknown causes have recently come to the attention of biologists. Here in North Carolina it is believed,

(Continued on page 18)

The age of doves, at least difference between young and old, can be determined by examining markings of wing feathers. Young birds have white fringe on outer primary coverts.

Bench Show At Lincolnton

THE N. C. foxhunters held their annual Mid-Summer bench show in Lincolnton July 1. Several hundred dollars worth of beautiful trophies were offered to the winners in the various classes. Guy Horton from West Virginia did the judging, assisted by the well known Tar Heel hunters Percy Flowers acting as ring master, and Charles M. Johnson as master of ceremonies. Clyde P. Patton, Executive Director of the N. C. Wildlife Resources Commission, spoke briefly commending the foxhunters for their enthusiasm for their sport and pledged his support to help protect and preserve this ancient pastime.

A class of ten puppies on the bench at the Lincolnton show. Altogether there were thirteen classes of fox hounds in the show.

The North Carolina organization is one of the oldest, second only to Kentucky and Tennessee. Many years ago the Hon. W. A. Bristol and Judge Henry Lane, both deceased, organized in a very small way the North Carolina Foxhunters Association. In the late twenties this organization fell into the firm hands of Col. Frank Page, who by his diligent efforts raised this organization to big time. Quoting from T. Ross Alexander of Statesville, "Frank Page was president for a number of years and kept it very much alive. He was the greatest president the N. C. foxhunters ever had." Since the Page era a N. C. winner is second in prestige and honor only to the National and United States Open. (NOTE: Frank Page did much to organize the N. C. Wildlife Federation and served as its first president. It was through this organization that leading sportsmen of this state were able to create and develop the North Carolina Wildlife Resources Commission.)

Tar Heel

Hounds and Hunting

By FRANK REESE

Lincoln County Fish and Game Protector

The fall field trials of the N. C. foxhunters will be run at Rocky Mount starting October 1. The present officers are R. B. Murphy of Bahama and W. C. Walker of Durham.

Generally speaking, the N. C. foxhunters run the Walker foxhound, but up in the hills of western North Carolina, Tom Davis has become nationally known as a breeder of Goodman foxhounds. He is secretary of the Goodman organization, which runs its field trials in Missouri.

Claud Ballenger introduced the Tryon bench show and directed it for twenty years. It is held in April and with the horse show it is one of the great sport events of the year. The best in the nation meet in Harmon Field, standing under the shadows of the majestic hills where Lanier was inspired to do his best writing. Tryon is the first test of the year, and a winner here usually goes on to win the National and other great shows. The best judges in America have judged at Tryon.

Tar Heel hounds have made history in recent years. The sons and daughters of the internationally known Billie Bristol have inscribed his name on the scroll of honor as the Tar Heel hound of the century. In recent months Burris Hill Sporty, a Billie Bristol hound, has won more than a score large shows. A few years ago many people were not satisfied with the methods used to select field trial winners. Leading sportsmen from various parts

Three litter mates owned by John Laney won first in three classes. L. to R. are: Laney's Pride, Laney's Joy, and Laney's Happy Jack.

Pine Ridge Freddy, U. S. open champion, a Walker hound, owned by Dr. Richardson of Salisbury, was shown at the Mocksville bench show.

of the nation set up a fool-proof test for foxhounds and Florence, Alabama, was selected for the test. Quoting again the genial sportsman from Statesville, "This hunt is the most strenuous in America." For three years North Carolina hounds of the Billie Bristol strain brought home the roses. The winners brought honor to the kennels of M. R. Garris of La Grange, W. V. Mooney of Kernersville, and Percy Flowers of Clayton. John Allen, president of this United States Open, and past president of the National, called to the foxhunters of the nation to come to Florence, Alabama, and help stop North Carolina. When the smoke had cleared from the battle lines, North Carolina had won again. A distant relative of Billie Bristol owned by Pine Ridge Kennels of Salisbury had made it four in succession for North Carolina.

At the National field trials first place honors have gone to Ernest Bigger at Concord; Golden Valley Kennels at Forest City; Weaver Meegs at Marshville; Dr. P. D. Ross at Gastonia.

Past History

The art of running hounds reaches far into remote antiquity. Toward the end of the Dark Ages, William Duke of Normandy made foxhunting famous in England and on the continent. Many kings and princes have followed in his footsteps. Queen Elizabeth kept and hunted a large pack of hounds. Edward VIII was just as famous as a foxhunter as he was as crown prince of a mighty empire or his love tryst with Wally Simpson. The early American pioneer, with his hounds by his side, blazed wilderness roads, fought wild beasts and savage Indians. George Washington was also first in foxhunting. He imported the red fox from England. His friend General Lafayette, gave him a number of French hounds. Madison, Jefferson, Jackson, and Lee were just as famous for their long hunts and famous hounds as in directing a mighty army or writing a declaration of independence.

Here is a group of fox hounds and their owners at the Mocksville fox hound show which was held last spring.

Labor Day Field Trials

Edenton, N. C. . . . Dave Holton, Edenton, N. C. Sportsman, has announced the annual Labor Day field trials to be sponsored by the Chowan County Coon Club on September 4. Grand prize for the winning coon dog will be $300.00.

Governor W. Kerr Scott has been made an honorary member of the Chowan County Coon Club, and has been asked to attend the Labor Day event. Officials of the club expect an entry of 150 dogs from North Carolina, South Carolina, and Virginia.

Governor Scott attended the May 20 coon dog trials held by the Chowan County club, and awarded the winning award to Carlyle Webb, Edenton, whose blue speckled coon dog Gable won both the line and tree events.

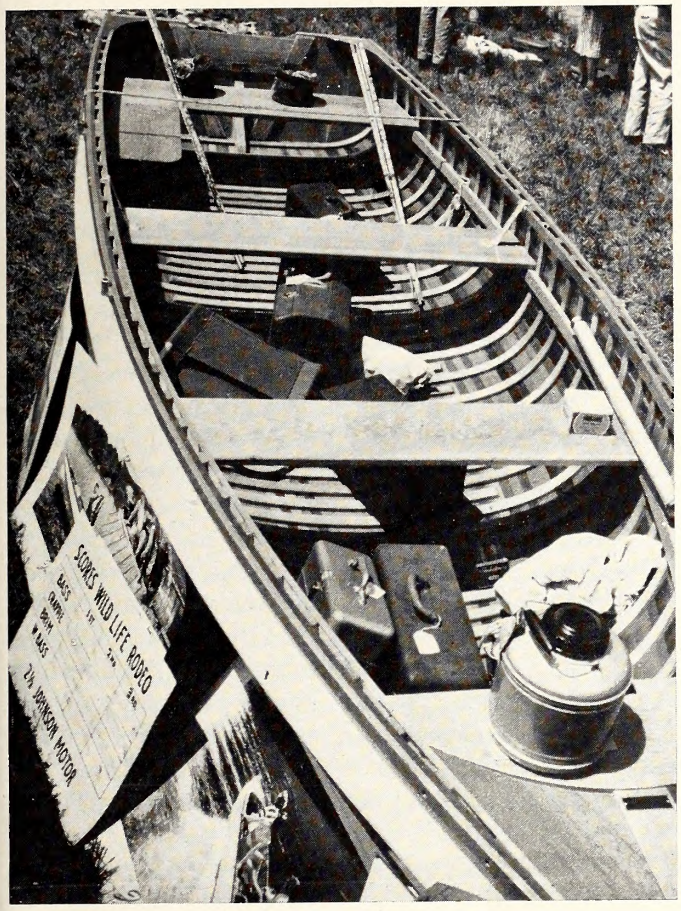
For details of trials write: Dave Holton, Edenton, N. C.

(*Getting the Answers,* Cont. from p. 16)

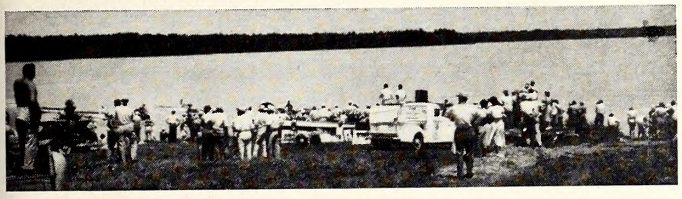
from what is known at present, that disease is not a serious factor and has little over-all effect on numbers of doves.

Upon completion of three years of field work, a final report on the project will be prepared. The conclusions and recommendations of the final report will be analyzed to formulate a management plan which will best serve the State of North Carolina. Finally, this plan will be adjusted to those of adjoining states. To make the project results available, a composite of all state final reports will be prepared by the Fish and Wildlife Service and published by the Wildlife Management Institute. In addition, in North Carolina the final report will be reproduced for distribution to wildlife technicians and a popular bulletin especially prepared for hunters will be published.

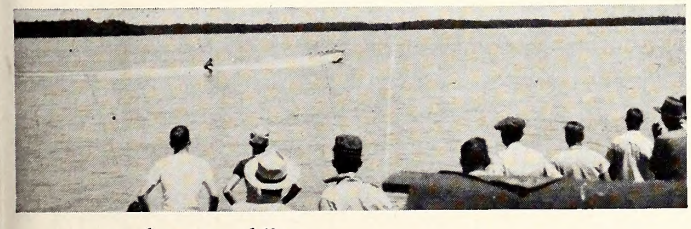
STANLY COUNTY WILDLIFE CLUB HOLDS FIELD DAY



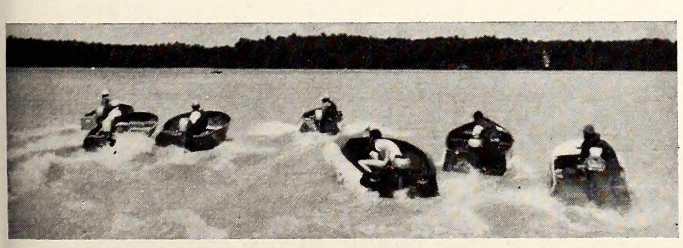
Above is a boatload of prizes which were given away at the Stanly County Wildlife Club Field Day held on the shore of Lake Tillery near the town of Norwood.



Part of the crowd of over 1500 who turned out for the July 4 event at Lake Tillery . . .

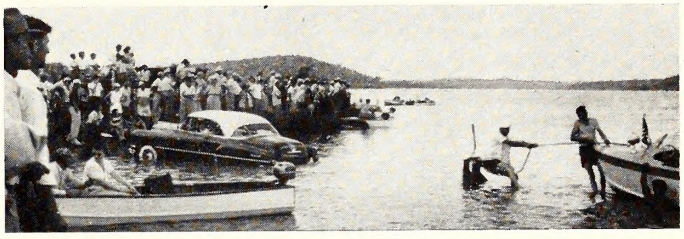


. . . to watch water skiing . . .



. . . and a series of boat races.

A convertible was used to haul a boat down to the lake. When it came time to pull the boat out, it got stuck . . .



. . . and had to be pulled out with a jeep. The Wildlife Club Field Day is an annual institution with the Stanly County Wildlife Club; another event will be held next year.

THINGS YOU MAY NOT KNOW

The bear moves with an awkward or shuffling gait because he has no clavicle to keep the shoulder bones steadily apart. Thus, as the forelegs are moved, the blade-bones "work" much more on the side than is usual in animals.

* * *

Especially wary when awake, the weasel is a very sound sleeper. It can often be taken up by the head, feet or tail and swung around for a considerable time before it begins to awake.

* * *

Otters, when hunting for fish, always swim up stream. This is because fish, when waiting for food or reposing, have their heads up the water. The otter can more easily approach them from behind.

* * *

The main difference in the physical structure of the dog and the wolf is in the eye. The pupil of the dog's eye is round, that of the wolf is oblique.

* * *

The jackal is called the "lion's provider." When on the trail of his prey, his hideous calls disclose his whereabouts to the lion, who follows in his wake and drives him away from the carcass when the kill is made, leaving him only the fragments when his own hunger is satiated.

* * *

When a female mole is caught in a trap, the male's sorrow at losing his mate is often so great that he starves to death.

TAR HEEL KIDS GET BETTER FISHING

By LeRoy H. Dorsey, *President,*
Better Fishing, Inc.

Photo by Boyd Davis

Good-sized pan fish! Charlotte's youngsters caught a mess of them during the second annual Better Fishing Rodeo on August 27, 1949.

THE kids have all the fun! If you don't believe this, stop in any of the following towns on August 26. In Winston-Salem, Reidsville, Charlotte, Hendersonville, Mount Airy, Wilson, Greensboro, Wilmington, Rocky Mount, Fayetteville and Hickory, the youngsters will all be out fishing—all of them that are under license age, that is. And the odds are fish hooks to sinkers that they'll be having the time-of-their-lives, too!

These towns are participating in the 1950 National Better Fishing Program for Boys and Girls which stretches across the entire nation. The boy and girl fishing program is a full summertime of fishing fun sponsored nationally by Better Fishing, Inc., 509 South Wabash Ave., Chicago, Illinois. Better Fishing, Inc., a not-for-profit organization took form back in 1945 when a group of men got together who enjoyed fishing themselves and wanted the youngsters to enjoy the recreational, moral and healthful benefits of angling that they remembered from their youth.

In the summers of '48 and '49, the Better Fishing Program got up steam. An estimated million lads and lassies entered in '48, two million in '49, and an estimated three million kids will be dunking lines and lures in the Better Fishing Program this year throughout the land. About 400 cities and towns are participating in 44 states and Hawaii.

The communities run their own programs under municipal auspices assisted by civic groups or sports and conservation clubs who serve as co-sponsors. Better Fishing, Inc. contacts the Mayor of each town because he is the official head of the Municipality. In turn, he assigns a committee of interested townspeople to run the children's fishing program.

The most celebrated part of the program is the annual Better Fishing Rodeo for boys and girls on the fourth Saturday in August. On this day the youngsters put forth all their angling skill in an effort to hook a prize winning lunker. Better Fishing, Inc. contributes two Grand Prizes for each participating community to present to its boy and girl rodeo champions. These awards are fine fishing outfits complete with rod, reel, lines, lures, etc. In addition to these Grand Prizes, local merchants donate supplementary awards to make the affair a real "kid's delight."

For the big fishing rodeo, the towns use whatever waters they have available, usually a park lake or nearby pond, but streams, canals, swimming and even wading pools have been used for the event. A biologist from the State Conservation Commission is generally called in to determine what species of fish will or does thrive in the fishing site, and then the site is usually stocked by the Commission to insure the kids of having something to catch.

Leading up to this big Better Fishing Rodeo is a 10-week "warm-up" period called "Adventures In Fishing." During this period, civic and sports groups organize fishing outings for the youngsters under the guidance of experienced anglers. Although this "Adventures In Fishing" period is not as "flashy" as the big Rodeo Contest, it is the time when fundamentals of good sportsmanship and the basic concepts of conservation are easily grasped by the youngsters as they try to become better anglers and emulate their fishermen-leaders.

The youth of Mt. Airy, N. C. are full of plenty of "vim and vigor," and the Police Department and the Juvenile Court were looking for some constructive outlets for this "juvenile steam." The Better Fishing Program was a natural, and Mt. Airy wasted no time in setting up a schedule. Since the establishment of the fishing events, James Shaw of the Juvenile Court stated there has not been a single case of juvenile delinquency reported in the city.

Chief of Police Monte Boone seconded Shaw's statement and added, "The program has been of

inestimable value in its contribution to the curbing of delinquency and has established good relations between the police and the children."

Some of the thrills and excitement always rub off on the parents and older folks, even though the program is only for children under fishing license age. And when the Better Fishing Program closes in the fall, it's always the grown-ups who start planning right away for next year's "fishing fun."

(*Food From the Sea,* Cont. from p. 9)

new book will contain no such section only because no one was available to write it, not because it was not planned for. As outlined by Dr. Coker, Chairman of the Survey's Advisory Board and of its Executive Committee, the final section "would embrace a comprehensive study of public attitudes and acts with respect to exploitation and conservation as these are expressed in legislation and administration affecting the resources and their utilization, including a far-reaching study of the history of fishery regulation with analyses of its motivations and common guiding principles."

The Survey of which the new book is the end product was financed through two grants, one from a New York alumnus of the University, Mr. George R. Lurcy, and the other from the General Education Board. After the Survey was well on its way, the separate Institute of Fisheries Research was established at Morehead City, N. C., supported jointly by the Knapp Foundation of New York and by the State of North Carolina, operated by the University in co-operation with the State Board of Conservation and Development. Fortunately the members of the Institute staff were able to contribute substantially to the work of the Survey, and the result, the "Survey of Marine Fisheries of North Carolina," bids fair to establish itself as a milestone in its field.

Dr. Taylor's challenging thesis will, he admits, probably excite much controversy, but, armed with a formidable array of statistics and with a redoubtable "precision in writing" he might take a hand in the debates his work is bound to stimulate.

(*Science Comes to Life,* Cont. from page 11)

exhibit was made by fourth graders. It was inspired by a preserved octopus brought by a student. The students read, told and wrote stories and made clay models of the octopus for their exhibit.

In addition to the exhibits, the Library displayed our Science books and we sold National Audubon Society books, charts, and pictures; the 4-H Club made a Food Exhibit; the local representative of Row Peterson Book Company showed Science Film Slides in a classroom and students showed a film on microscopic life, in another classroom.

We worked out a visiting schedule for the school so that each teacher could accompany her class through the halls to see the exhibits. At two o'clock, all classes gathered in the Auditorium for a forty-five minute demonstration of "Liquid Air" experiments performed by a chemistry teacher. In the evening we heard a recording of a Resource-Use-Education radio program, then saw a demonstration of transportation experiments by another teacher.

The day following the Fair, the school held a Pet Show. Members of the community were asked to be judges. Committees of students had charge of announcing results over the loud speaker system, and assisting at the rings and registration tables. Pets were shown in three rings on the school playground. One ring was for dogs, one for cats and one for miscellaneous animals of all kinds from lovebirds, fish, turtles, to hamsters and chickens.

The two seventh and two eighth grade Science classes were organized as Wildlife Clubs under the sponsorship of the North Carolina Wildlife Resources Commission. Groups elected officers and chose projects to work on. The first half of our time was devoted to work toward presenting the results of our studies to the other classes of the school in an assembly. Several groups gave talks to accompany lantern slides or pictures shown by the opaque projector; some brought specimens, the bird group brought bird houses and feeders, some of those who worked on plants showed dish gardens. During the last half of our club time we incorporated our wildlife work with the displays for the Science Fair.

"Just a little something I picked up downtown, dear."

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

Summons have been served to over eight hundred thousand youngsters throughout North Carolina—back to school they'll troup. Many a loud protest will be made over the end of vacation time. It's natural enough to lament the end of one sort of pleasure and the beginning of what seems to be a chore, but everyone who reads this would be the first to inform a complaining youngster along the line, "You'll have the chance of a lifetime, son. Probably nothing you will do after you finish school will give you as much real pleasure, profit or benefit as the years you are now spending to prepare yourself to work for a living and to be a better citizen." Yes, from our mature point of view we can sermonize to the kids and tell them how we'd do it *if* we could go over it again. The hitch is *we can't go over it again.* All we can do is to point the right way to the youngsters. Are we pointing the way when almost a million of them are in school as you read this and the vast majority know little or nothing of our state's resources? Have we, as parents or seniors, taken the kids fishing or hunting and shown them the how and why of the Sportsmans' Code? Are we, as leaders of wildlife clubs, planning to develop activities for the children who are tomorrow's members? Or, have we no responsibility in these matters? Now is the time to plan for this year's program. A project for the youth of the community is a most satisfactory thing. With the number of hunting, fishing and wildlife clubs existing in the state, there should be a conservation activity under way in the schools of every county. Let's not miss the chance of *our* lifetime.—W.D.

Mr. Lloyd Campbell, 1113 Anderson Street, High Point, N. C., writes as follows:

"We examined a copperhead snake at school which a boy had killed. It had four (4) fangs, two on each side of its upper jaw, side by side. What is the explanation of this?"

Poisonous snakes such as the copperhead, rattler, cottonmouth moccasin, and coral snake, which are found in North Carolina, are able to grow new fangs to replace those which become damaged or otherwise made useless. Quite often these spares develop until they are large enough to be seen. If one of the working fangs is damaged or knocked out, the spare moves into its place. For this reason, it is necessary to draw the fangs of captive snakes frequently in order to keep them harmless.

The following report to Mr. Fred G. Frick, Chairman of N. C. Wildlife Federation District No. 8, is printed in part, for its general interest to all sportsmen:

"I sincerely regret that circumstances beyond my control prevented my attending the recent wildlife meeting. I have been advised also that the representatives from Yancey County came to Morganton at 8 P.M. May 31st, and of course the hearing had already been concluded. I have heard no objections to the proposed game laws, and we are grateful to those of you who kept an eye on our sporting interests.

"We are pleased to report that the club is now making unprecedented progress, particularly in fish restoration. We have our own rearing pools for trout, bass, and crappie; and our fishing is already showing definite improvement. We also had successful programs in bi-color planting, establishment of a deer refuge, and the foundation work for coon restocking. A smooth-running machine doesn't make much noise; and I'm thankful to report that the silence that envelopes Rutherford County is the result of a healthy, cooperating organization.

"We are grateful for the fine work that is being done by . . . the Wildlife Resources Commission. We have generally accepted the fact that the state is now contributing its full share; and if our wildlife program does not succeed, I am convinced that the failure will be due to our own indifference."

Very truly yours,
(Signed) W. B. Robertson, Jr.

Mr. E. B. Spencer of Charlotte, N. C., writes a letter which we are proud to pass on to you. It is our constant goal to make WILDLIFE IN NORTH CAROLINA the best magazine of its kind. Thank you, Mr. Spencer, and the many others who have been complimentary.

"I have just received my first copy of "Wildlife" and I certainly want to congratulate you and your associates on the nicest piece of printing that I have seen in such a magazine as yours.

"Having been in the Allied Printing Game more than 25 years, I feel that I speak with some authority when I say 'Congratulations to all of you'."

Don McAllister, RFD 2, Wilmington, N. C., writes as follows:

"Your colleague, Rod Amundson, got his lines a little mixed up when he was researching for his very good article on the Eastern Crow. The fish crow is a smaller bird than the common crow. Rod's article read '. . . the fish crow, a larger species . . .' I think your magazine is tops."

The principal editor informs me that crow is not bad eating. He has eaten it before. Yes, reader McAllister and others are correct. A third species, or Southern Crow, is mentioned which is smaller than the Common Crow. We might also try to feed Rod's typewriter a sliced crow sandwich.

Mr. G. G. Robinson, Secretary of the Haywood County Hunting and Fishing Association, writes:

"I am writing you in regards to live raccoon business for next fall. Will we be able to get some more and what will we have to do? Can we give the order now on what we think we can take; if so please send us a blank.

"The Club is very much interested in them and hope we can get at least 200 next time. Any information on this will be greatly appreciated by all members.

"We are hoping to have a live raccoon trial next fall. Anything on that as to how they use the coon will also be appreciated."

Yes, our raccoon trapping and redistribution program will be resumed this fall. Mr. Schwall, Chief of the Game Division, says that all groups interested in this program will be given plenty of notice when the details are worked out. The following people have been interested in 'coon dog activities: Mr. Bob Sillmon, Box 124, Ramseur, N. C.; Mr. L. J. Baker, Marshville, N. C.; Mr. Joseph Cavin, President, Tar Heel Coon Club, High Point, N. C.

Largemouth Bass Following Swimming Animals

Reprinted from *The Journal of Wildlife Management*
Vol. 14, No. 1, January, 1950

Mr. W. C. Vogt (*vide* Seton, E. T. Lives of Game Animals, p. 497, 1928) described an interesting association between beaver and trout (Field and Stream, March 1921, p. 1004). He observed six large trout lying directly under the belly of a large beaver. They apparently paid little attention to the beaver until it slapped the water with its tail at which the trout would dash for cover. Seton stated, "They seem to recognize the beaver as friend and protector."

It is common knowledge among largemouth bass fishermen that these animals often lie under logs and rocks either for protection or in wait for prey. It does not seem to be generally known that largemouth bass (*Micropterus salmoides*) will also follow swimming animals or floating objects.

Several years ago on an artificial pond near Auburn, Alabama the writer observed a pair of mallards (*Anas platyrhynchos*) swimming across its surface. A largemouth bass, estimated to weigh over four pounds, was swimming slowly about a foot below and a few feet behind one of the ducks. As they reached shallow water they began tipping up and feeding along the opposite edge. The bass continued to follow slightly below and to one side of the feeding birds. As the ducks moved away the bass was lost to sight but a few minutes later a large one struck viciously at something on the water's edge near the feeding birds. On several different occasions large bass were seen to strike in shallow water near these ducks. Their prey could not be observed but it was believed to have been the frogs and small fish being frightened from the vegetation by the feeding birds.

During a beaver trapping and transplanting program in Alabama a largemouth bass was caught in a Bailey live trap with a 42 pound beaver (*Castor canadensis carolinensis*). The bass, estimated to weigh three pounds, was slashed in numerous places by the beaver's incisors and was dead when discovered by the trapper. The beaver made no attempt to eat the fish. In order to have been taken with the beaver, the bass must have been swimming within a foot of it when the trap was sprung. On another occasion a two pound bass was taken at the same time a large swamp rabbit (*Sylvilagus aquaticus aquaticus*) was caught in the Bailey live trap set in a beaver pond. The bass was unharmed by the rabbit. It must have also been swimming very close to the rabbit when the trap was tripped.

From these observations it appears that the largemouth bass will follow several species of swimming animals. We present the hypothesis that the bass feed on the prey flushed from hiding by the larger animals.

Mr. Vogt's trout observations lead me to believe that they also might have discovered the swimming activity of the beaver to be an aid in obtaining food.— Frederick S. Barkalow, Jr., *Professor of Zoology, N. C. State College of Agriculture and Engineering, Raleigh, N. C.*

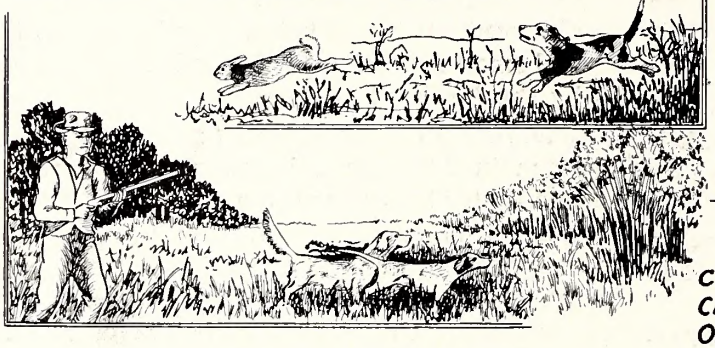
DOVE HUNTERS

If you find a band on the leg of a dove this fall, send it in to the WILDLIFE RESOURCES COMMISSION, Raleigh, N. C.

APPLY NOW — FOR MORE GAME

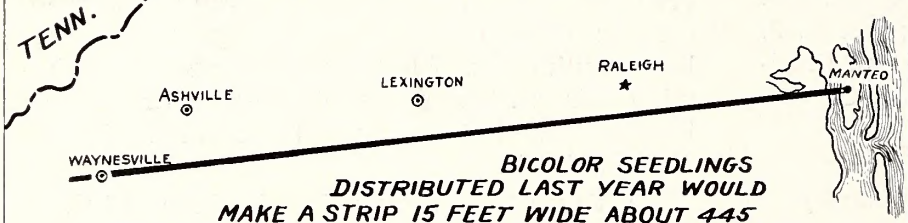
FARM GAME IS A CROP

TARHEEL FARMERS HAVE BUILT THOUSANDS OF PRIVATE PONDS - THEV CAN NOW PROVIDE THEMSELVES WITH BETTER HUNTING BY THE SAME KIND OF EFFORT AND LESS COST



AND BAGS OF ANNUAL SEEDS ARE GIVEN BY THE WILDLIFE RESOURCES COMMISSION TO FARMERS AND OTHER GOOD CONSERVATIONISTS - SEE YOUR WILDLIFE CLUB OFFICERS - S.C.S. OR COUNTY AGENTS OR ANY OF THE COMMISSION'S PERSONNEL IN YOUR COUNTY

SPRING PLANTING BRINGS FALL HUNTING



BICOLOR SEEDLINGS DISTRIBUTED LAST YEAR WOULD MAKE A STRIP 15 FEET WIDE ABOUT 445 MILES LONG! PLANS ARE UNDER WAY TO FURNISH MANY MORE THIS YEAR

HUNTING SEASON OPENS THIS MONTH — HUNT SAFELY — MAKE A FRIEND OF THE MAN WHO OWNS THE LAND YOU HUNT — SHOW HIM THE COURTESY OF ASKING HIS PERMISSION

WILDLIFE COMMISSION DISTRICT BIOLOGISTS

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2	A.D. ENNETT	SWANSBORO
3	C.B. WOODHOUSE	HOLLY SPRINGS
4	W.E. PRICE	BOX 513 ELIZABETHTOWN
5	D.C. THORNTON	CHAPEL HILL (TENTATIVE)
6	DAVID TAYLOR	HOFFMAN
7	T.R. MITCHELL	RT.5 BOX 12 STATESVILLE
8	ROBERT HAZEL	RT.6 BOX 182-B MORGANTON
9	REX BIRD	1619 KENSINGTON ST., HENDERSONVILLE

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Wildlife

IN NORTH CAROLINA

TEN CENTS OCTOBER 1950

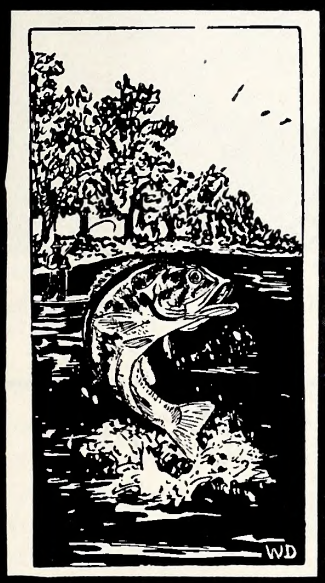
Photo by Jack Dermid

Action like this is why bass fishermen are so fond of their sport. This medium-size largemouth has grabbed a lure, and is trying to rid himself of it. The above action shot was made with a 4x5 Speed Graphic at f-5.6, 1/1000 second.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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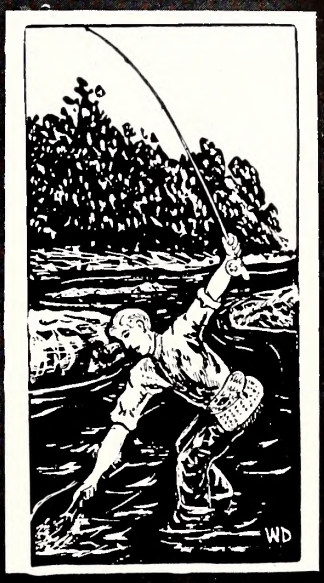

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IN THIS ISSUE

October, 1950 Vol. XIV, No. 10

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
GLORIA MOORE, Circulation
JACK DERMID, Photography

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COVER

Win Donat used water colors to depict one of the earliest arrivals in the annual fall waterfowl flight, the greenwing teal. The waterfowl season opens November 27.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh. North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

★ ★ ★

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Photo by Jack Dermid

The largemouth black bass. Note the deeply indented separation between the spiny and soft dorsal fin, and the jaw extending back of the eye.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-first of a Series on The Wildlife Species of North Carolina

THE BLACK BASS

By ROD AMUNDSON

History

TO women who have not been initiated into the pleasures of angling, the black bass is an arch rival, a siren which lures her husband away from the small hours of the morning to the darkness of night. The most devoted and loving spouse becomes a delinquent to bed and board when the bass are biting, and the lady of the house must either while away the hours by herself, or take up bass fishing in self defense. There can be no half-way meeting ground.

Black bass fishing became a sport which increased in popularity with the westward push of civilization, and today ranks high with the most popular game fish angling.

Although the black bass are typically American species, they were first recognized and described scientifically by Frenchmen back in the early Eighties. The confusion in the minds and descriptions of the Frenchmen exists today among fishermen who cannot always be sure whether they have hooked and landed a largemouth, a smallmouth, or a spotted bass.

The first scientific description of the smallmouth was made by Lacépédes, a French taxonomist who was the victim of unfortunate circumstances: the single specimen sent to him was a deformed individual, part of the soft rays of the dorsal fin having been bitten off or otherwise disposed of. Lacépédes gave the fish the name *Micropterus dolomieu,* meaning Dolomieu's small-fin. The North Carolina smallmouth bass retains this scientific name with another *dolomieu* added, but the fish continue to hold the original description in disdain by growing rather well-developed dorsal fins. Down through the years faulty identification and description have given the smallmouth black bass other scientific names, but the one given here prevails.

Difference in appearance and structure between the largemouth and smallmouth black bass became apparent to early taxonomists, and the largemouth was given the technical name *Micropterus salmoides,* which is recognized throughout the world of natural science today.

To add to considerable confusion on black bass identity, North Carolina is blessed with a third type, the spotted or Kentucky bass. The spotted or Kentucky black bass was not recognized as a separate species until Hubbs described and listed it in 1927. The scientific name of the spotted bass is *Micro-*

peterus punctulatus punctulatus. This species is generally similar to the largemouth and smallmouth, but not as numerous or widely distributed.

Characteristics

A complete, accurate, and infallible description of the three species of black bass would require many pages of diagrams and discussion. For the most part, a few general clues will serve to distinguish among the three. Borderline or doubtful cases causing dispute as to identity would have to be settled by trained experts. Few fishermen have or take the time to count scales above, below, and along the median line, or even count spines in the dorsal and anal rays.

Let us dispose of the spotted bass first, since it is rare and limited in range. Spotted bass, up to 1950, had been reported as found only in the Hiwassee River and its impoundments. The following description is taken from Willis King's "Important Food and Games Fishes of North Carolina":

"Adults usually under 16 inches in total length and 3 pounds in weight. A lateral series of dark blotches tend to become confluent, forming an irregular band. Adults have a longitudinal streak or spot on each scale on the sides below the lateral band. Body contour before the dorsal fin is flatter than in the smallmouth. The notch between dorsal fins is moderate. The upper jaw extends approximately to below the rear margin of the eye. The base of the caudal fin is yellowish in adults, having a "painted" appearance. As in the smallmouth, there are small scales on the membranes between the rays of the soft dorsal and anal fins. Three brownish or greenish streaks radiate backward and downward from the eye. The young have a dark band on the caudal fin as do the smallmouth young. Scales 7 to 10 from dorsal fin to lateral line, 60 to 68 in lengthwise series, 14 to 19 from lateral line to front of anal fin; scales on the cheek in 11 or 12 rows. A distinguishing character of the spotted bass is the patch of teeth on the tongue." This is the easiest means of certain identification since neither the largemouth nor smallmouth have them, and the teeth can be felt with the finger tip.

Next in importance of numbers and range is the smallmouth. (Avid smallmouth fishermen would object to having the smallmouth placed anywhere but first on any conceivable rating. Those who have caught smallmouth would understand.)

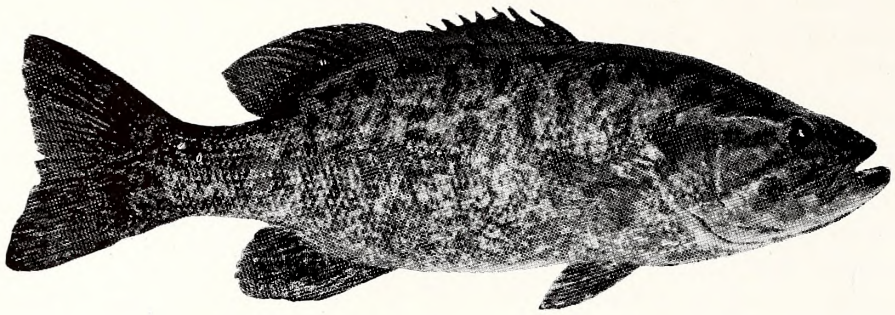
"Adults ordinarily under 24 inches in total length and rarely over 5 pounds in weight. Dorsal contour convex behind head; body moderately compressed, becoming deeper in well-fed adults. Color of upper parts silvery to greenish, sometimes golden or black, with 10 to 15 vertical bars not always showing; underparts light in color; cheeks with 3 olive-green radiating bars. Young are plainly colored or with slight vertical bars, but never with a dark lateral stripe; the caudal fin is dark about the margin. The long and low spinous dorsal fin is separated from the soft dorsal by a moderate notch. Scales between front of dorsal fin and lateral line in 10 to 12 rows, 66 to 78 in a lengthwise series, 19 to 22 from lateral line to front of anal fin. The lateral line is complete or nearly so. The scales on the cheeks are in about 17 rows. Small scales are present on the membranes between the rays on anal and soft dorsal fins. The upper jaw barely reaches to below the posterior margin of the eye." (King's "Important Food and Game Fishes of North Carolina.")

The largemouth is by far the most numerous and widely distributed of the three black bass, and because of this is undoubtedly the most popular.

"Adults greenish above, lighter beneath, sometimes plain silvery. The sides usually show spots, and an irregular band or series of blotches. In muddy water the fish are lighter in color; in blackish water they are usually darker. Adults weighing over 10 pounds are occasionally taken in North Carolina. The average size is under 5 pounds. Females reach a considerably larger size than do the males. The

This small bass is a fighter. Think what a 10-pounder would do!

Photo by Jack Dermid



The smallmouth usually is a smaller fish than the largemouth. Note different color pattern, "shorter" mouth, and dorsal fin less deeply notched. Smallmouths like cool, fast-running rivers, are wonderful sport for the fly fisherman.

young have a definite lateral stripe and a plain caudal fin (no marginal band as in the smallmouth). The spinous dorsal fin is well arched and separated from the soft dorsal by a deep notch. The scales are larger and in fewer rows than in the smallmouth and spotted bass. There are usually 8 rows between the front of the dorsal fin and the lateral line, 68 in a lengthwise series, and 16 rows between the lateral line and front of the anal fin. There are no scales on the membranes between the rays of the soft dorsal and anal fins as in the preceding two species. The lateral line is complete or nearly so, and scales on the cheeks are in about 10 rows. The upper jaw extends at least to the posterior edge of the eye, usually beyond it." (King's "Important Food and Game Fishes of North Carolina".)

It is native to all of the warm water streams of the State, and may stray into the lower extremes of trout waters. In addition to widespread natural distribution, largemouths have been stocked in an endless array of ponds and small lakes throughout the Piedmont and Coastal Plains. It is most abundant in coastal waters which border on the sounds, and even extends into brackish water to a limited degree. The fresh waters of Currituck Sound, and the fresh water bays around Kitty Hawk and Colington provide an abundance of largemouth fishing.

The smallmouth black bass is a fish of fast, clear waters, and in North Carolina is found mostly in the mountain foothills counties. It is rather more partial to larger streams than trout. You will find smallmouths where the rivers run wide and relatively clear; they may intermingle with trout, then disappear altogether in an upstream direction, to be replaced by browns, rainbows, and brook trout.

Attempts have been made to introduce smallmouths to the Piedmont and Coastal Plains sections, and to introduce largemouths to the mountainous sections. These efforts have almost invariably failed, and the species are now established in the environments most agreeable to them.

Geographical distribution in North Carolina may be a preliminary clue to identification. A black bass taken from the upper reaches of the Broad, Catawba, or the Yadkin Rivers is apt to be a smallmouth. One from any river or stream from the Piedmont east is most likely to be a largemouth. As for the Hiwassee watershed, all three species may be found, but the most likely catch will be the largemouth, with the smallmouth and spotted bass fewer respectively.

Although the watersheds east of the Continental Divide are the natural range of the three black basses, introductions have been made to other parts of the world. An interesting sidelight on the reproductive habits (see below) or black bass has been occasioned by their introduction to New Zealand. Where, in their native northern hemisphere, bass normally spawn in spring and early summer, they spawned in November when transferred to the southern hemisphere.

Color Variation

Black bass refuse to conform to anything more exact than a general color pattern. Differences in colors and shades of colors depend largely on the water in which an individual lives. Those in darker, muddier water tend to be lighter in color, while those from clear water will be darker. There will be degrees of variation between the two extremes.

Spawning

The reproductive habits of the three basses are so similar that they may be discussed as a group. The nesting site is selected by the male, usually in water less than five feet deep. He fans out a shallow depression in the bottom, preferably gravel or sand, from one to three feet in diameter. It is believed that the diameter of the spawning saucer or bed is about twice the length of the fish. He then selects a fecund female, and rather forcefully persuades her to deposit her eggs in the nest. Immediately after the eggs are spawned, the male fertilizes them with milt. From then on care of the nest, and even the young, is up to the male parent. He stands guard over the eggs until they are hatched, and will defend them against any and all intruders including the female. Once the eggs are hatched, he guards the young until the brood scatters about to seek homes in surrounding cover. Black bass are canibalistic, and will not hesitate to eat each other's young. Occasionally they will make a meal of their own!

The number of eggs per fish depends on its size and physical condition. A large female may give vent to 5,000 to 10,000 eggs, but the average is 2,000 to 3,000. A week to ten days is required for hatching, depending on water temperature. Warmer water will speed up hatching, and vice versa. Spawning does not begin until water temperatures have

reached 64 or 65 degrees.

All three species may be raised successfully in ponds. In fish hatcheries, breeding adults are provided with ponds of suitable depth and bottom material. As soon as the young are hatched, the large fish are removed to prevent canibalism, and the young fish are left to themselves to grow to fingerling size.

Food Habits

The food habits of bass are closely related to their popularity as a game fish. They are almost exclusively carnivorous. Hence, when hungry, they will smash viciously at moving prey or moving baits.

At hatching time, each tiny bass is equipped with a yolk sac on his belly which contains several days' supply of food. Once this has been absorbed and assimilated, the young fish is on his own. Let all forms of life he can swallow beware!

Smaller, free-swimming organisms provide the early menu for small bass; but as soon as they are big enough to swallow minnows, the fry of other species, or their smaller brothers and sisters, they set about hunting for other fish. Given plenty of food, bass make remarkably rapid growth, and in Eastern, N. C. will reach and pass the ten-inch mark a year after being spawned. Here are some items in the diet of a largemouth black bass: Minnows (and any other fish small enough to swallow), crayfish, frogs, mice, tiny turtles, fresh water shrimp, insects, and aquatic insect larvae. They have been accused of taking baby ducks, and are known to leap at swallows skimming low over the water. Small wonder that fish with such ambitious appetites are popular with anglers.

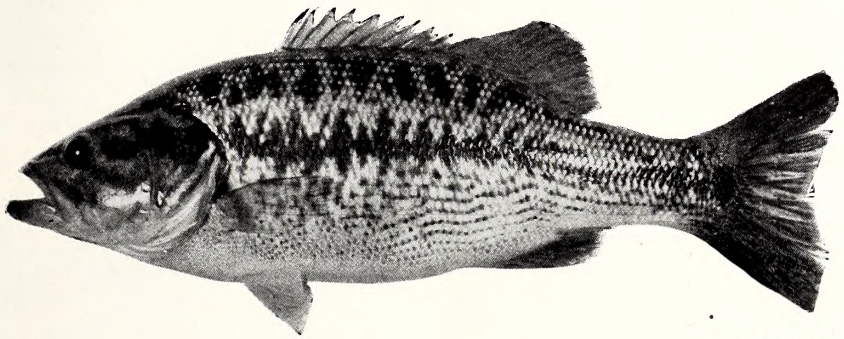
Management

Years of investigation and volumes of writings have not yet reached all of the ramifications of bass management. Upland game managers have only soil, water, agriculture, and climate to contend with, plus a few unknown factors and variables. A body of water is something else; each pond, lake, and stream is a separate world unto itself, affected by unending environmental factors and countless changing conditions.

At best we can point out here but a few essentials: (1) reasonably clean water, (2) an adequate food supply, (3) plenty of cover for escape, feeding, and resting, and (4) an agreeable population balance with other species of fish.

For many years fish stocking has been the cure-all for the fisherman's problems. When fishing became poor in a given body of water, fishermen immediately demanded that more fish be put in the pond or lake to restore good fishing. All too often, hatchery-bred fish simply added more individuals to a body of water that was already so over-stocked that there was not enough food to go around and the fish had become stunted.

In most situations, a few adult bass can take care of supplying an abundance of new fish, so that restocking is entirely unnecessary. It can be truthfully said that the only time bass stocking is justified is when a suitable environment is present, and bass entirely or almost entirely absent. An over-population of bass can be handled in two ways: supplying more food by the introduction of forage species, or by removing a large number of bass to make more food available to the remaining fish.



At left is the spotted or Kentucky bass. It is less numerous than its cousins, almost entirely restricted to the Hiwassee region. A patch of teeth on the tongue distinguishes it from other black bass. Below: Flyrod fishing for bass is considered the acme of piscatorial sport.

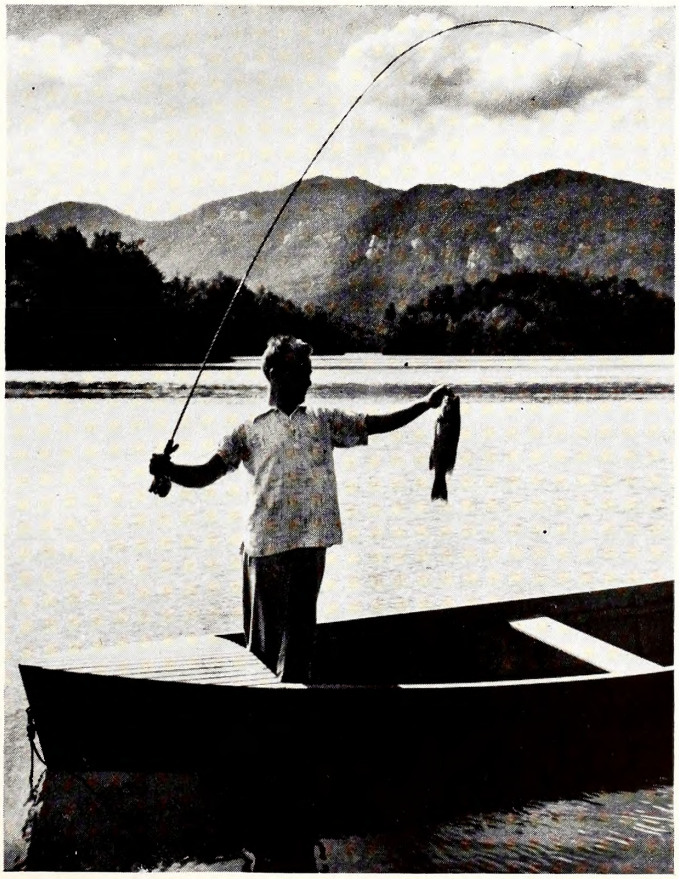


Photo by North Carolina News Bureau

The fish manager endangers his reputation by perfecting his work. He may bring about the establishment of a perfect balance between species of fish in a pond and the food supply, only to have fishermen complain that the fish don't bite; they are too well fed!

Because of their small size, farm ponds lend themselves especially well to fish management. They are the nearest approach to controlled laboratory conditions. A new pond may be fertilized to exact productivity, and stocked with a precise proportion of bass to bluegills or to other species. Then, other conditions remaining reasonably constant, the sunfish feed on small plant and animal life, and are in turn a prolific source of food for bass. Further management resolves to more fertilizer when needed, and catching both species fast enough to keep the pond from becoming over-crowded and the fish populations from becoming unbalanced.

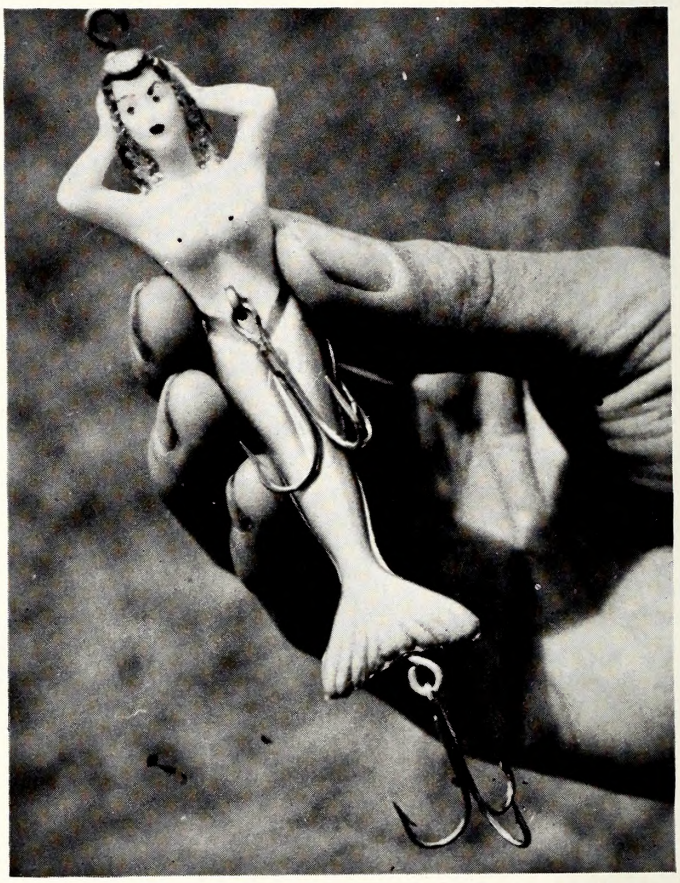
The foregoing is an over-simplified example of fish management, but it brings out the essentials. The difficulty of management increases in proportion to increased area of water and number of species present.

Angling

The best way to start an endless argument among fishermen is to make a flat statement that any one method (flycasting, plugging, spinning, etc.) is the best way to take bass. Many bass fishermen are purists who use only one kind of tackle and one type of bait. Others will suit the bait and tackle to the water or the season. All have this idea in common: there is no finer sport that bass fishing.

In bass fishing, the millionaire sportsman with his costly tackle becomes the social equal of the barefoot, freckled, farm boy with his cane pole, cotton line, and can of worms. The bass will ignore the most beautifully contrived and expertly handled lure to grab at a wad of worms; then ignore the worms or an enticing live minnow and smash angrily at a fly, a plug, or a popper. You can lay a lure right over his nose, only to have him back away from it, or at best give it a lazy brush-off with his tail. Then, when you have sorrowfully reeled in the lure to the side of the boat, he will crash into the bait, tangle your line and break your rod. To add further to the bewilderment of anglers, bass will completely ignore the most artistically handled lures when weather, air, and water are "right"—and bite like mad when only the hardiest fishermen go forth.

Fishermen who use surface lures never cease to thrill at the sight and sound and feel of a big bass shattering the stillness of a pool to hit a floating offering. Whether hooked on or below the surface, the bass will fight the line with every ounce of his tireless energy. He may dive to the bottom to sulk, or try to wind the line around a snag, or pull it under the boat. Best of all, he will get up and "walk on his tail" in a frantic effort to dislodge the hook. Many an angler has fought a big bass to a standstill only to see his lure fly from the fish's jaws and sink ignominously into the water. Bass fishermen have experiences and feelings that cannot be put into words.



Black bass take an almost endless variety of lures—when they feel like biting—and the above is an extreme example. Favorite lures are underwater spoons and topwater poppers and jigglers.

SANCTUARY

A place of refuge for birds, or for game or other animals, where predatory animals are controlled and hunting is not allowed; as, a bird *sanctuary;* a game *sanctuary. Sanctuary* and *refuge* are sometimes distinguished, the former being applied to a place where all forms of wildlife are equally protected, the latter to a place where predaceous birds and animals are controlled for the protection of more desirable forms of wildlife, as game and insectivorous birds.

Webster's International Dictionary

Rainbows, brooks, and browns are North Carolina's important trout species. They will be discussed next month.

THE 1950-1951 HUNTING OUTLOOK

All in All, There Will be Abundant Sport for Tar Heel Nimrods This Fall and Winter

By CLYDE P. PATTON

Executive Director
N. C. Wildlife Resources Commission

SEVERAL factors have combined to make the coming hunting season one of the biggest and best in the history of North Carolina. First, Nature has been kind to most native wildlife species, with ideal weather throughout most of the breeding season. A substantial carry-over of game from the preceding year, combined with good weather, has produced a harvestable crop to supply reasonable demands by sportsmen. In addition to natural reproduction of game, wildlife habitat plantings for the past several years are beginning to pay off in substantial yields of game. This is especially true of such small game as rabbits, quail, possums, coons and foxes.

There are regions where game species are abundant to the point of an over-supply. Other regions have scarcities to the point where little or no harvesting will be allowed. Raccoons are an example of this unequal distribution. In eastern counties raccoons are over-abundant to the point of presenting a serious menace to crops, while in some parts of the Piedmont region they are so scarce as to warrant a closed season in several localities.

The Wildlife Resources Commission's program of wildlife habitat restoration has been greatly expanded. During the spring of 1950 enough lespedeza and other wildlife food and cover plants were given to cooperating farmers to make a strip fifteen feet wide stretching from Manteo to Waynesville. The program has been in operation for several years, and is definitely paying off in increased small game production.

The Commission now has a highly trained wildlife specialist in each of its nine geographical districts. These men work closely with landowners to improve wildlife habitat on the land.

Hunters this fall may find less land posted against hunting, but at the same time they will see signs directing them to ask permission before going on certain lands to hunt. Last year the Wildlife Commission distributed 40,000 posters which read "HUNTING BY PERMISSION ONLY". These posters were given to all farmers who requested them. Instead of prohibiting hunting on land, the posters challenged hunters to ask the farmers' permission before going on their land.

A poll of farmers using the signs indicated that trespassing was greatly reduced, and that hunters cooperated splendidly in asking for permission. Another poll of hunters showed an overwhelming majority in favor of this poster system. Nearly all hunters contacted believed that the posters did not reduce the amount of land available to hunting.

Another factor on the credit of the hunting ledger is better law enforcement. There will be, of course, law violations which will go undetected and unprosecuted. Nevertheless, the law enforcement staff of the Wildlife Resources Commission is operating at full strength, and manpower is augmented by such modern equipment as a patrol plane, patrol cars, and two-way radios.

Despite a substantial supply of game for the annual harvest, it should be remembered that there will undoubtedly be more hunters in the woods and fields and marshes this fall than ever before. Annual increases in the sale of hunting licenses have been on an upward trend for several years past.

Photo by North Carolina News Bureau

The deer supply is at least adequate despite losses last year from screw worms and an outbreak of disease.

and despite the draft of men into the armed services, this year's army of hunters will probably exceed last year's record number.

With an expected increase in the number of hunters, safety in the handling of firearms will be an important consideration. North Carolina ranks low in the nation in the number of hunting fatalities per thousand hunters, and this fine record must be maintained. *All* hunting accidents are a result of carelessness, and all can be prevented.

This year's regulations for hunters again reflect the Wildlife Resources Commission's policy of simplicity and uniformity. As last year, there will be no lay days; there is even greater uniformity in opening and closing dates as well as bag limits than last year, and fewer exceptions to the rules. Space does not permit a complete résumé of the hunting regulations and laws here. Abstracts of these are available at all hunting license dealers, and may be obtained from local game protectors or the Wildlife Resources Commission's offices in Raleigh.

Here is a brief roundup of the hunting outlook by species:

DEER: Despite losses of deer last summer and fall (1949) by screw worms and disease, the deer supply is at least as adequate as it was last season. Illicit hunting took a toll of deer, but all in all deer hunting should be good in the areas opened to hunting.

BEAR: A continued level of bear populations is reflected in a bear season comparable in length and bag limit to last season. The regulations on taking bear have been further clarified by specifically prohibiting the killing of a female bear with cubs, and the killing of a cub bear.

WILD BOAR: These ferocious game animals will be legal prey this year only in the three counties where they occur. Most of the territory on which wild boar range is included in wildlife management areas, and hunting will be done on an organized basis. Despite receiving wide publicity, wild boar hunting in North Carolina is not an important sport from the point of view of the number of sportsmen participating in it.

RACCOONS AND OPOSSUM: Opossums are plentiful throughout their range, and raccoons are abundant in the eastern part of the state. A program of trapping and transplanting live coons from east to west may help relieve the shortage of coons in the Piedmont and Western areas.

SQUIRRELS: Squirrels have held their own in numbers throughout their range, but late frosts may have cut down on their food supply in the Piedmont, but mast is abundant in the mountains. In setting the season, the Commission has followed a policy of a late opening date to cut down waste from "wolf" infection.

RABBITS: Cottontail rabbits seem to have held their own in numbers this year, and rabbit hunting will be about the same in popularity and success as during the past season. Apparently rabbits are near the low level of a population cycle, and with normal breeding seasons during the next few years, should make an important increase over present numbers.

QUAIL: Many sportsmen have expressed concern regarding heavy rains in most of the state during the quail nesting season. A survey of field biologists and game protectors indicates that damage to nesting quail by floods occurred in only two small localities. Most of the heavy rains came after the nesting season, and excellent quail shooting should be in line this year. Farmers throughout the quail range have cooperated in making cover and food plantings to produce better quail hunting.

WILD TURKEYS: Wild turkeys are still far from numerous. They seem to have held their own in numbers. Again the season limit is three male birds. No turkey hens may be taken, and no more than one gobbler may be taken per day.

RUFFED GROUSE: Grouse populations have held steady, and this season's hunting will be about the same as last. Grouse occur only in mountain counties.

All in all, hunting in North Carolina this year and in years to come will reflect the success of a sound wildlife conservation program supported by public interest—plus a helping hand from Nature. North Carolina is becoming one of the really great game states.

Photo by Margaret Fisler

Rabbits are still at a low ebb in the population cycle, but will furnish sport to thousands of hunters.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Abstract of
Migratory Game Bird Regulations Applicable To North Carolina
1950-1951

Adopted by the U. S. Fish & Wildlife Service

DOVES: MAY BE HUNTED FROM 12 O'CLOCK NOON UNTIL SUNSET EACH DAY FROM SEPTEMBER 16 TO SEPTEMBER 30, 1950, AND FROM JANUARY 1 TO JANUARY 15, 1951. DAILY BAG AND POSSESSION LIMITS 10.

SORA: MAY BE HUNTED FROM ONE-HALF HOUR BEFORE SUNRISE TO SUNSET FROM OCTOBER 2 TO DECEMBER 1, 1950. DAILY BAG AND POSSESSION LIMITS 25.

RAILS AND GALLINULES: MAY BE HUNTED FROM ONE-HALF HOUR BEFORE SUNRISE TO SUNSET FROM OCTOBER 2 TO DECEMBER 1, 1950. DAILY BAG AND POSSESSION LIMITS 15, EITHER SINGLY OR IN THE AGGREGATE.

NOTE: DUCKS, GEESE, COOTS, AND MERGANSERS MAY BE HUNTED ONLY FROM 12 O'CLOCK NOON UNTIL ONE HOUR BEFORE SUNSET ON THE FIRST DAY OF THE SEASON, AND THEREAFTER FROM ONE-HALF HOUR BEFORE SUNRISE TO ONE HOUR BEFORE SUNSET.

DUCKS: MAY BE HUNTED FROM NOVEMBER 27, 1950, TO JANUARY 5, 1951. DAILY BAG LIMIT 4, POSSESSION LIMIT 8. NOT MORE THAN ONE WOOD DUCK MAY BE HAD AT ONE TIME.

GEESE: MAY BE HUNTED FROM NOVEMBER 27, 1950, TO JANUARY 5, 1951. DAILY BAG LIMIT 2, POSSESSION LIMIT 2, APPLICABLE TO CANADA GEESE OR ITS SUB-SPECIES, OR WHITE-FRONTED GEESE. IN ADDITION TO THE CANADA OR WHITE-FRONTED GEESE, THREE BLUE GEESE MAY BE TAKEN.

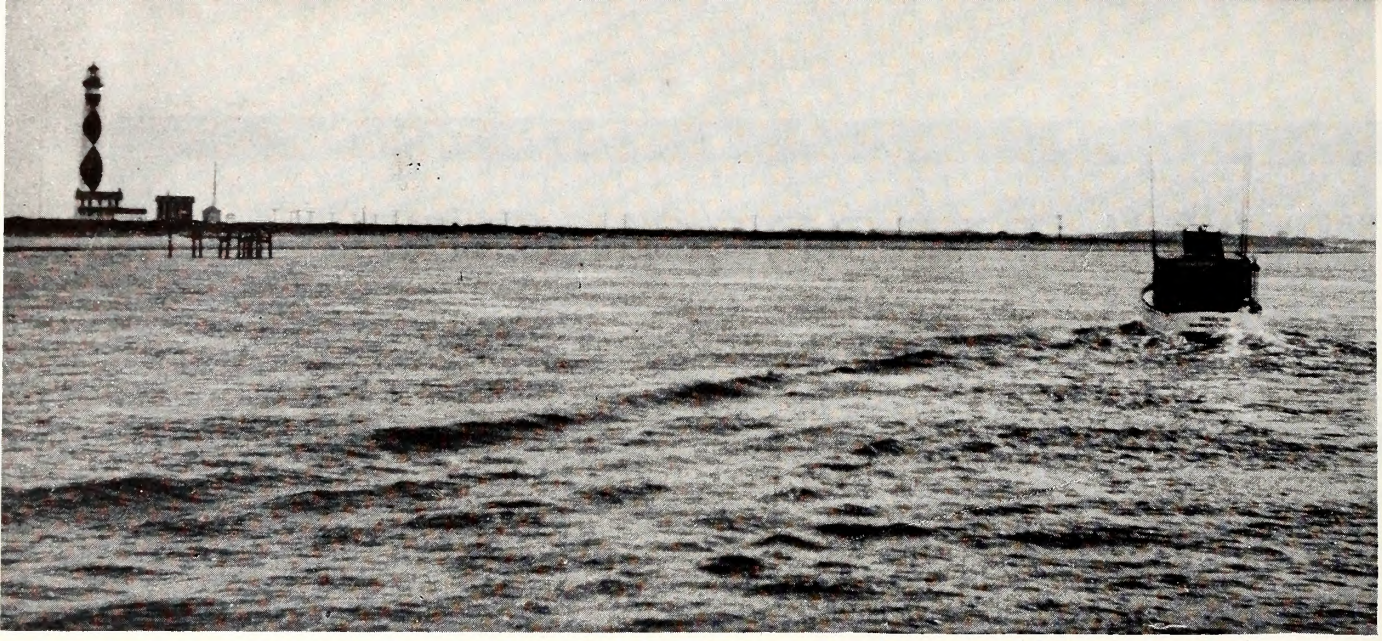
COOTS: MAY BE HUNTED FROM NOVEMBER 27, 1950, TO JANUARY 5, 1951. THE SHOOTING HOURS ARE THE SAME AS FOR DUCKS AND GEESE. DAILY BAG AND POSSESSION LIMITS 15.

AMERICAN AND RED-BREASTED MERGANSERS: MAY BE HUNTED FROM NOVEMBER 27, 1950, TO JANUARY 5, 1951. THE SHOOTING HOURS ARE THE SAME AS FOR DUCKS AND GEESE. DAILY BAG LIMIT 25, SINGLY OR IN THE AGGREGATE. NO POSSESSION LIMIT AFTER THE FIRST DAY. HOODED MERGANSERS (HAIRY CROWNS) COUNT THE SAME AS DUCKS.

THERE IS NO OPEN SEASON ON ROSS' GEESE, SNOW GEESE, SWAN, OR BRANT.

WOODCOCKS: MAY BE HUNTED FROM ONE-HALF HOUR BEFORE SUNRISE TO SUNSET FROM DECEMBER 12, 1950, TO JANUARY 11, 1951. DAILY BAG LIMIT 4, POSSESSION LIMIT 8.

THE N. C. FOX HUNTERS ASSOCIATION WILL HOLD ITS ANNUAL FIELD TRIALS AND BENCH SHOW IN ROCKY MOUNT ON OCTOBER 16-19. THE BENCH SHOW WILL TAKE PLACE MONDAY NIGHT OCTOBER 16 AT THE ROCKY MOUNT RIDING ACADEMY, WHERE THE DOGS WILL BE KENNELED.
OCTOBER 17 IS DERBY DAY, OCTOBER 18 ALL AGE DAY, AND THE FINALS WILL BE RUN ON OCTOBER 19, ON WEDNESDAY NIGHT, OCTOBER 18 MEMBERS OF THE ASSOCIATION WILL HOLD A BANQUET AND BUSINESS MEETING AT OVERTON'S CHICKEN AND BARBECUE PLACE.
FOR PARTICULARS ON THE SHOW AND FIELD TRIALS, CONTACT R. B. MURPHY, BAHAMA, N. C., OR W. C. WALKER, 1433 COLE MILL ROAD, DURHAM, N. C.



It was hardly six a.m. when the **Tenicum** (shown) and the **Eleanor** cut the calm waters of Barden Inlet, slipped past Cape Lookout lighthouse, and entered the open sea.

Minut
hind

Autumn is the Time For

DEEP SEA FISHING

These pictures were taken in August to give you a preview of what to expect off North Carolina's coast in September, October, and early November. Beautiful fall days and excellent salt water fishing go hand in hand, for it is then that the sea teems with amberjack, dolphin, king mackerel, bluefish, drum, and more. It is then, too, that party boats all along the coast, loaded with anglers, troll the sounds, the inlets, and the rolling sea as fa out as the gulf stream.

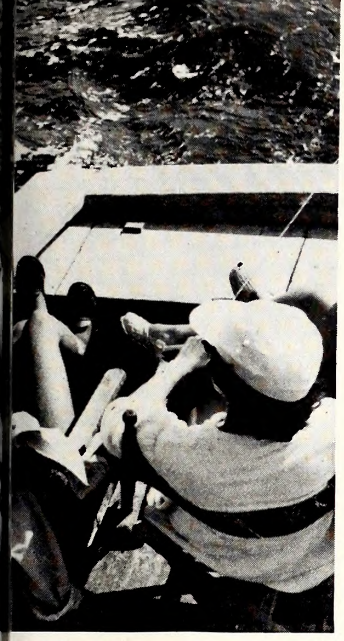
But now, let's go aboard the **Eleanor** with Captain Jim Harke and his party from Martinsville, Virginia, Dr. and Mrs. Pau Baker and Mr. and Mrs. Sam Fowler, for a day of sport. Cap tain Harker operates the **Eleanor** and the **Tenicum** out of Har kers Island, North Carolina.

Photos by Jack Dermi

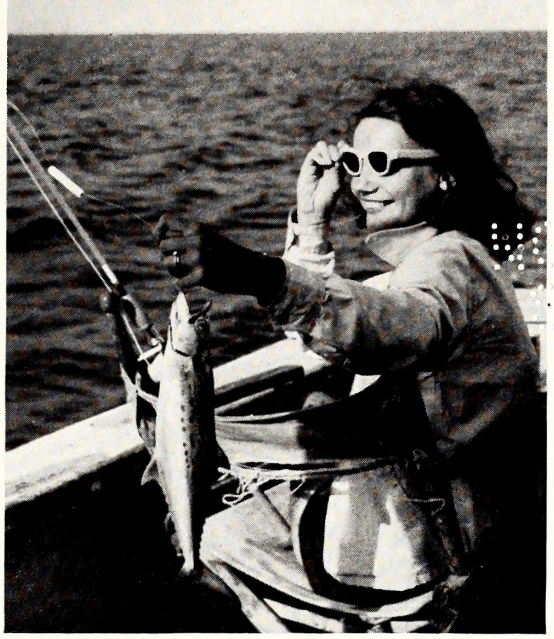
Feather or bone lure? The mackerel were not particular. Note its many small teeth.

It took Captain Jim only a few moments to clean and fillet a fish. He made short work of the day's catch of thirty.

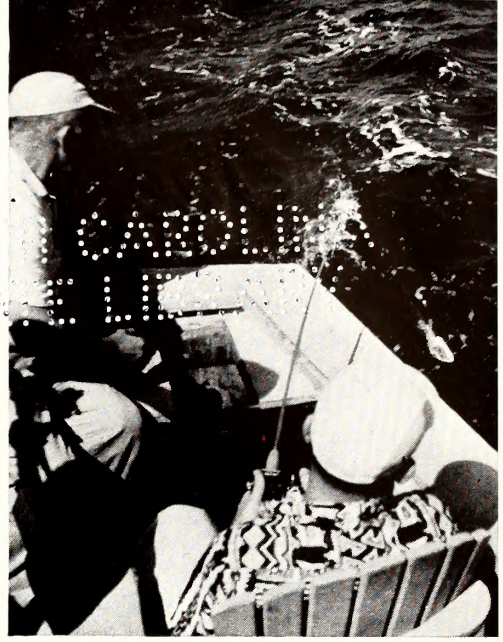
During the trip, a recording v "Tar Heel Wildlife Review." H son (right) interviews Sam Fov



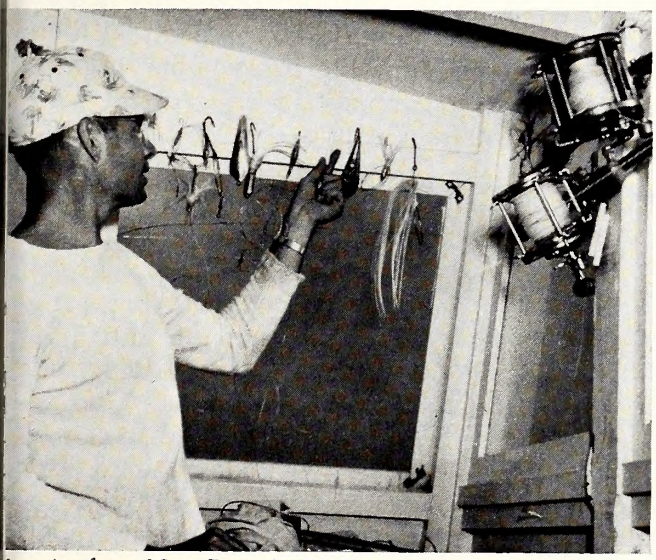
and lures were played out be-
ling began.



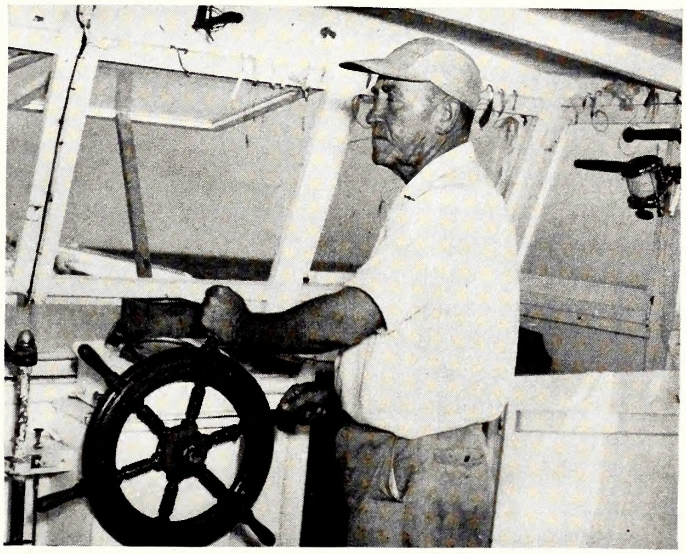
Anticipation was short for Mrs. Baker. A Spanish mackerel quickly hit her lure.



Captain Harker stands by to land a fighting dolphin being brought in by Dr. Baker.



jeweler from New Bern, B. H. Baxter, worked as deck hand
t for fun. Here he selects a bone lure.



Captain Jim Harker at the wheel of the **Eleanor.** For over forty years, he has followed the ways of the sea.

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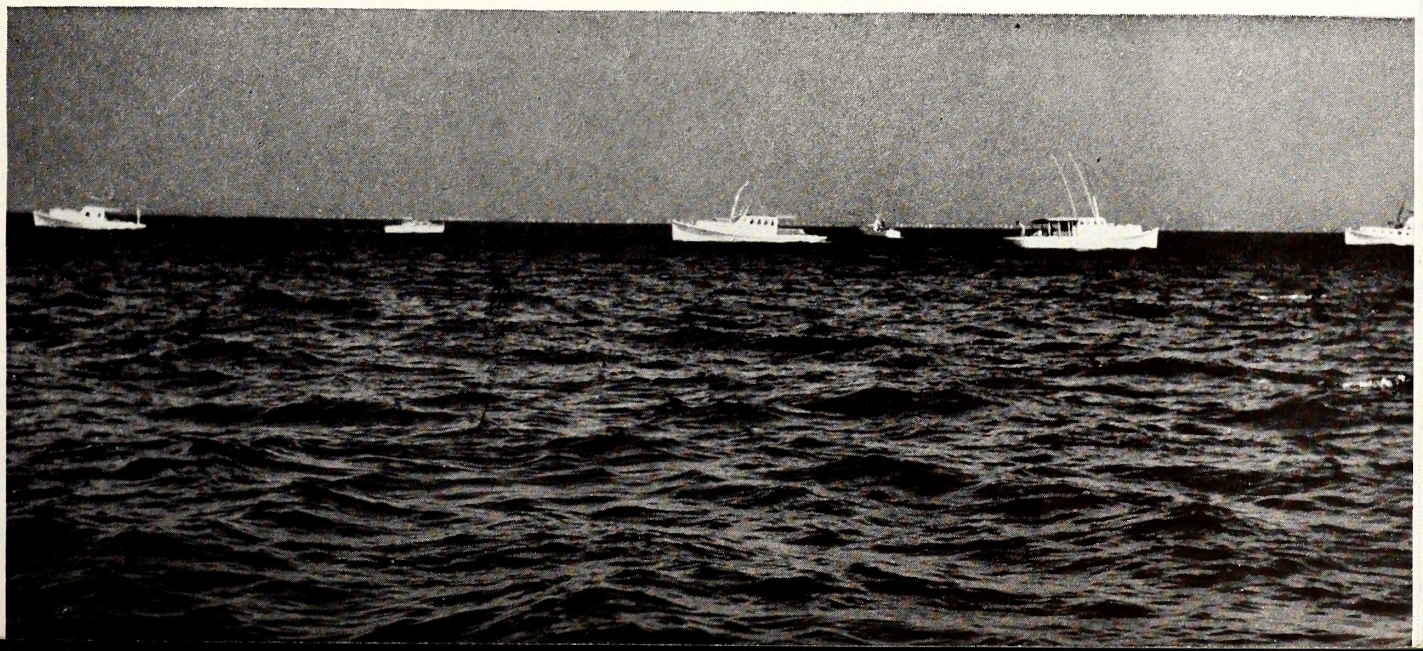
Alone on the ocean? Impossible when the fish are striking, for the party boat captains watch each other and all move in when one boat shows signs of good luck.



One WILL GET YOU *twenty!*

IN

North Carolina's Big Game Restoration Program

By FRANK B. BARICK
Leader, P.R. Project 21-D

The program presented below has been developed to answer the demand for more big game in the State of North Carolina. We believe it represents an improvement over what we had in the past because it is based on what the people want and its execution has been planned on a technically sound basis.

The creation of additional protected refuges from which game can spread out into the surrounding territory is a practice which has proven most successful in both this and other states. The use of both native and northern deer to restock these areas has several obvious advantages. Basing the regulation of the harvest on accurately determined kill records rather than guesses is applying sound business to conservation, and the development of practical and economical habitat improvement methods is sorely needed in this day of excessive government spending.

We present this program so that all may know what we are trying to do and how we hope to do it. Please note that this is a statewide program and that it is obviously impossible to complete it in a single year. That which is not accomplished in one year will be done in another. We solicit the active participation and cooperation of every sportsman in this program. We've a lot to gain by all working together.

Three Main Objectives

THE purpose of this article is to set forth the objectives of the Tar Heel big game restoration program and to explain the methods by which these objectives are to be attained.

The first and most important objective is to increase the supply of big game in the state. When we say big game we are referring principally to deer, but we are by no means excluding subsequent work on other species. The preliminary emphasis is placed on deer because we can get more done, and quicker, with deer than with other species of big game. We have better sources of supply of deer, deer are more easily and more cheaply secured, and they breed at a rapid rate provided they are given adequate protection.

Photo by Margaret Fisler

These deer are on their way to new homes in areas where food and cover are plentiful but where there are no deer.

The second objective of this program is the creation of more refuges and public hunting grounds. In the western part of the state most of the big game territory with big game on it is limited to portions of the two national forests, and there are extensive areas of woodland where there is no big game. In the eastern part of the state a large part of the big game hunting territory is reserved by lumber companies or clubs, and much of the remainder is posted against public hunting. It is proposed that there can and should be more big game public hunting grounds in both the mountain and coastal plain regions of the state, and it is the function of this program to establish such areas.

The third objective of this program is to develop more efficient big game management techniques especially suited to our own problems. Management in this case can be broken down into two types: 1) habitat improvement, and 2) hunting regulation. Habitat improvement in big game management, as in the management of other game, involves providing a continuous and adequate supply of food and cover in such a manner as to secure the greatest return for the money invested. This is an especially interesting challenge since forest wildlife habitat can be maintained and improved through properly regulated forest practices, thus yielding a profit in both wildlife and forest products. Hunting regulation involves the orderly harvest of surplus animals. This harvest should be regulated to leave an adequate supply of seed stock but the harvest should not be limited to the extent

of allowing overpopulations to develop. Where possible, hunting regulations should be so written as to create sex ratios which will provide the greatest annual harvests of game.

New Herds to Be Created

It is proposed that since the presently occupied ranges of big game are populated to capacity or near capacity, the most efficient way to increase the supply is by creating new herds on new areas. At this point we shall confine our considerations to the methods by which new deer herds are created.

In securing stock for new deer herds we have two sources of supply: local North Carolina deer, and out of state deer. There are both advantages and disadvantages connected with getting seed stock from either of these sources, and it would be well to consider these points at this time.

The advantages of using native deer may be listed as follows: 1) they cost only about one-fourth to one-half as much as imported deer, 2) these deer are conditioned to the climate, the terrain, and food conditions, and 3) they are more resistant to local diseases and insect pests. The second and third points are made especially strong since it is proposed that in the future all deer to be secured in the west are to be used to restock western areas and similarly, any eastern trapping would be used to secure seed stock for eastern areas only. The principal disadvantage in using native stock is that the local sportsmen, not understanding the advantages to be derived and the methods to be used, object to having deer removed from their favorite hunting grounds. In a majority of cases where objectives and methods have been properly explained, however, sportsmen have endorsed the program wholeheartedly.

One advantage in buying out-of-state deer for restocking purposes is that it does not reduce the size of established herds in North Carolina. This, however, is a rather minor point when we consider the small number taken from any one area and also when we consider that it is mostly the doe deer that are removed for seed stock purposes. A second advantage claimed for importing deer, especially northern deer, is that they are larger animals and that they will increase the size of our native deer by cross breeding. This is probably true for the first few generations, but it has been demonstrated that in any particular widely distributed species, such as deer, those animals occurring near the northern limit of the range, as in Wisconsin or Canada, tend to be larger-bodied than those living near the southern limit of the range, as in North Carolina or Florida. The size of the animal is ultimately determined by climate and food in the place where it lives, and any increase in size which we might gain by importing northern deer will therefore not be a permanent one. Depending on the proportion of northern deer to native deer on any area, we will probably get some increase in size, but we can not expect too much.

The disadvantages of depending entirely on out of state deer are as follows: 1) they cost about $100 per head, and this is two to four times as much as it costs to trap and transplant native deer. 2) The supply is uncertain. Last year 100 deer were ordered but only 50 were delivered. From a long range standpoint it is even more uncertain because we can never know when the other state will pass a regulation forbidding the export of deer. 3) There is no way of telling whether the imported deer are wild stock. Our recent experience has demonstrated that at least a few of our imported deer were tame farm-raised stock. The Commission has no intention of raising deer on cabbage; this winds up as a losing proposition in more ways than one. When we trap deer locally, we know what to expect from them in the way of eating habits.

Both Native and Northern Deer Being Used for Restocking

Current plans call for securing seed stock of deer for new areas by both trapping native deer and importing northern deer. Depending on how many will be available, somewhere between 50 and 100 deer will be imported, probably from Wisconsin. Another 100 to 150 deer are to be trapped from places where they are now abundant locally. Since the lands to be stocked this year are in the western part of the state the trapping is to be confined to this region. It should also be noted that the total number to be trapped will depend on the number of new refuges that will be ready to receive them. (See Below)

The U. S. Forest Service has expressed considerable concern over damage done by deer to new tree growth in three areas. In other words, as far as the land owners (or land manager) is concerned, the deer have in some places, reached or exceeded the carrying capacity of the range.

In each area to be trapped, emphasis will be

Photo by Margaret Fisler

Deer trapped for transfer to other stamping grounds are ear-tagged so biologists can keep tab on them.

Photo by Frank Barick

When deer become too abundant in a given area, they cause damage such as this to young trees, and may destroy their own habitat.

placed on the removal of doe deer. Not more than one buck will be removed for each four doe deer. This system was followed in last year's trapping, when a total of seven "excess" bucks were turned loose at the traps. Furthermore, no bucks larger than spike-horns are to be removed from the trapping area. This will ensure leaving the large trophy heads for the hunters who favor these particular hunting grounds. As a result, the stock removed from any area will amount to a few dozen doe deer and less than a dozen fawn and spike bucks.

This type of trapping will result in the greatest benefit to the trapping area because each of these areas has an excess of doe deer due to continuous buck hunting. This will serve to balance the sex ratio and make for more efficient breeding, i.e., fewer barren does. It will also make hunting more interesting because there will then be a larger proportion of bucks to does. Last year, one unsuccessful refuge hunter came out of the woods with the remark, "I saw 23 deer, all *does*."

One Gets You Twenty in Five Years

Four doe deer to one buck will give good results on new stocking areas. With proper protection on a new area, deer can be expected to increase at the average rate of one and one-half fawns per doe each year. At this rate, 50 head of deer (10 bucks and 40 does) would increase to over one thousand in five years.

State and Federal regulations require that all restocked species be protected from hunting for a minimum of five years, but at the end of five years the area could be opened to hunting if the restocking has been successful. With continued protection from illegal hunting and from stray dogs and other predators, the new herd will continue to grow till by the end of the tenth year they will have increased to over 3000, even if during the second five year period we allow an annual buck harvest equal to about one-half of the number of new bucks we could expect through breeding. This would amount to about 70 bucks in the first year of hunting, and over 300 in the tenth year.

Truly, this sounds too good to be true. It would in fact be hard to believe were it not for the fact that this is exactly the way that most of our present western public hunting grounds were created. Quite understandably, some of our more ardent and conscientious sportsmen question the desirability of deer trapping, but when we examine the manner in which it is done and the twenty to one benefits that we stand to gain, there can hardly be any sound argument against the procedure.

New Refuges and Public Hunting Grounds Being Created

The second major phase, and perhaps equally important as the first in our restoration program, is the creation of more refuges and public hunting grounds. This is to be done by dedicating additional areas of U. S. Forest Service and adjoining private land to this end, and by creating new areas on lands to be bought or leased by the State. Although it would be foolish to predict what the future holds, it is our hope to establish an average of three new areas each year for the next several years. As a result of this work we will have four different categories of big game public hunting grounds:

1) The Cooperative Wildlife Management Areas on U. S. Forest Service lands of which there are ten in number at the present time. These are relatively large areas—approximately 20,000 to 40,000 acres in extent—and most of them are open to hunting on a public drawing system. These ten Wildlife Management areas are: Pisgah Game Preserve, Sherwood, Mount Mitchell, Daniel Boone, Fires Creek, Standing Indian, Santeetlah, Wayah, Rich-Laurel, and Uwharrie. There is little hope of creating additional areas in this category in the immediate future since all of the large blocks of U. S. Forest Service lands are already taken up with these ten. All have been stocked with deer, and all but the last three are opened to controlled public hunting.

2) Deer Restoration Areas are being located on the smaller blocks of U. S. Forest Service lands, each of which is about 10,000 acres in extent. Since these

will be so small, they will not be used as management areas in the same sense as those in the first category. That is, it is not contemplated that they will be hunted by the public drawing system. Instead they will serve primarily as breeding grounds to supply the surrounding areas and possibly be opened to public hunting controlled only by length of season. We now have one such area, the Flat Top Mountain Deer Restoration Area in Yancey County. This was set up and stocked during the past fiscal year. It is estimated that there may be land available for about three to six more such areas.

3) State Game Lands are to be set up outside national forest purchase unit boundaries as they become available. The Wildlife Resources Commission has approved the purchase of such areas with Federal Aid funds and money set aside for this purpose from license sales during the past several years. We are at the present time in the process of acquiring the first two. These areas too, will be about 10,000 acres in extent and will be stocked with about 50 deer each.

4) Where it is impossible to buy land to create refuges and public hunting grounds, an attempt will be made to lease portions of large holdings presently in the hands of pulp and paper companies. Preliminary investigations lead to the conclusion that several of these concerns will be willing to lease the wildlife rights to the state. The outlook for such areas is especially promising in the eastern part of the state. Most of these lands are already stocked with deer, and their principal requirement will be protection. However, where necessary they will be restocked with deer from local and out of state sources.

It should be pointed out that the former program called for releasing deer on various private lands whereon the landowners agreed to protect the seed stock. Stocking was completed on all but one of these places last year, and current plans call for finishing the job on this last one this year. Although we believe that the present system is a great improvement, we feel obliged to satisfy earlier commitments made by the state.

As a result of this program we hope to establish between ten and 15 new refuges and public hunting grounds during the next five years. They will be on Federal, State, and private land, and they will start to pay off five years from now since the first one has already been established.

Improved Management Techniques Being Developed

The third phase of the big game restoration program has to do with developing more efficient methods of maintaining food and cover and more equitable methods of harvesting the surplus.

We are already in the process of developing more efficient habitat improvement techniques. Over the past two decades the impression has been forming that wildlife is a luxury and therefore expensive to hunt and expensive to produce. As public employees we have no means or desire to control the amount spent on hunting equipment—the more the better as far as business and industry are concerned. We are, however, deeply concerned with the expenditure of public money for the production of game. We are constantly striving to seek the practical, the less expensive, the more efficient way to attain our goals. We are dedicated to the proposition that the most efficient means of creating more game is through habitat improvement. In forest wildlife management, which is of course our immediate concern, we are fortunate in that through modifying cutting schedules and properly selecting the areas and trees to be cut, we can not only maintain and improve the habitat for wildlife, but also gain a financial profit in the process. It is not only a situation wherein one can eat his cake and have it too but also raise bigger and better cakes as the result of eating it.

The most efficient way to manage the bulk of the habitat on a big game area is through efficient forest management practices. Everything else that we do is more or less supplementary, and these supplementary practices such as creating plantings and open areas, establishing fruit-bearing species, etc. cost money. We must therefore exercise great care

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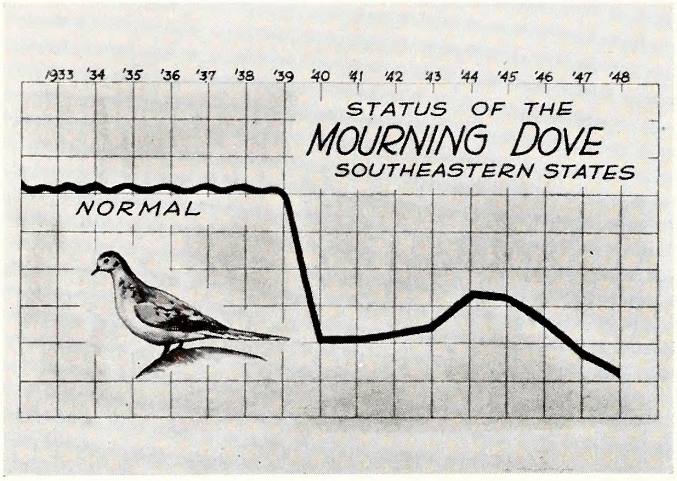
Photo by Frank Barick

Restoration areas are set up to protect newly-stocked deer from hunting. These areas give deer a chance to become established, and will eventually be opened to hunting.

NEED WE MOURN THE MOURNING DOVE?

Reprinted from the U. S. Fish and Wildlife Service release,
The Status of Migratory Game Birds: 1949-50

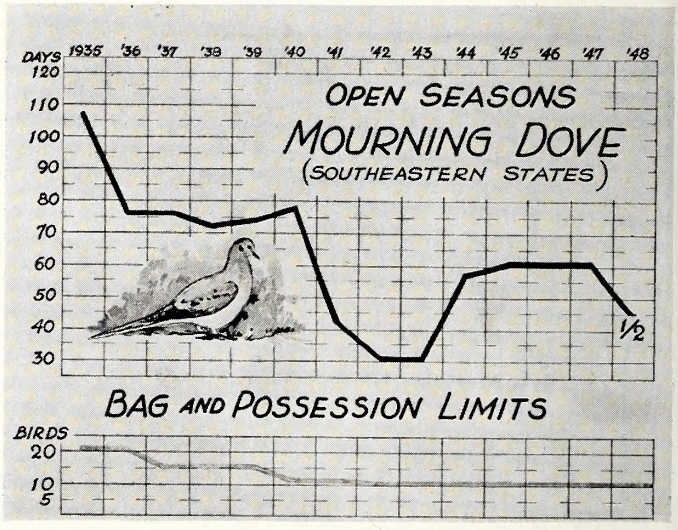


TO the sportsmen of the Southeastern States the Mourning Dove is as important as the ducks and geese. Unfortunately, this bird is much more difficult to manage as a game species. Although it breeds in every State in the Union, and in southern Canada, it performs regular migrations, some birds going well south into Mexico. The greatest known concentrations during the winter season are in the Southeast.

A single pair of Mourning Doves will produce several pairs of squabs each year. As a matter of fact the breeding season in some areas is known to extend from February through November and it is believed that there are some nesting records for both December and January. This immeasurably complicates administration as shooting in September in any of the states south of the line made by the northern borders of North Carolina, Tennessee, Arkansas, and Oklahoma, always causes a heavy loss of young birds in the nest. Although it is probable that perfect management never will be achieved, it is also true that by the first of October in this region, nesting has so declined that the fledgling looses can be greatly reduced.

There are no figures on the status of this bird that are comparable to those obtained for waterfowl during the past fifteen years. As a result, the graph can be considered only as an "opinion record". Nevertheless, it does illustrate the concensus of the biologists, administrators, and enforcement officers who have been in contact with this problem.

For the 5 or 6 years prior to 1940 it is believed that the dove population was more or less normal. Undoubtedly there were ups and downs caused by a variety of factors but by and large the yearly fluctuations in relative abundance were not conspicuous. In January of 1940, heavy snow falls accompanied by prolonged freezing temperatures, extended south to the Gulf coast. Great numbers of birds were killed, the loss of Woodcock in particular, attracting much public attention. Although unnoticed at the time, Mourning Doves also were decimated to a startling degree. The full extent of this was not immediately understood and was not reflected in the hunting regulations adopted for that year when shooting seasons up to 77 days were permitted. During the next year or two the population remained low although evidence of slow recovery was detected. This continued, with some acceleration, to a peak in 1944, but even this was far below the pre-1940 normal. Since that time, the number of birds have again steadily declined and



the total using this region is now *below* the level left after the storm of January 1940. With no known causes on which to fix the blame, it appears that the principal reason for this situation is increased hunting pressure, particularly at times when too many adult birds still have unfledged young in the nest.

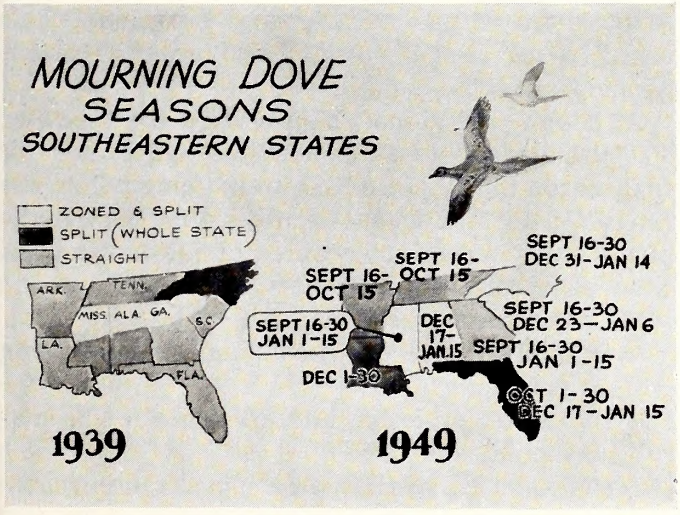
The double graph (*Open Seasons on the Mourning Dove—Southeastern States:—Bag and Possession Limits*) illustrates the regulatory action that has been taken in an attempt to meet the situation. Although a season of 107 days was permitted in 1935 this was decreased to 77 days in 1936 which, with slight modification, was continued for the next 4 years. Appreciating the serious nature of the dove populations, the season was reduced to a maximum of 42 days in 1941 and was further reduced to 30 days in 1942 and 1943. With some recovery evident, gradual lengthening was then authorized and for the period 1945-1947 inclusive, seasons of 60 days

were permitted. Realizing that the birds were again going down, the season was reduced in 1948 to 45 half-days and last year to 30 half-days.

The lower part of the graph shows that comparable action has been taken with respect to the bag and possession limits which have been progressively reduced from 20 birds in 1935 and 1936 to 10 in 1942. As a bird of small size, much reduction beyond this figure may not be desirable. Nevertheless, it is obvious that the time has come for drastic action if the sport of dove hunting in the Southeastern States is to continue.

The two maps (*Mourning Dove Seasons: Southeastern States*) shown together for the years 1939 and 1949 to illustrate the extreme confusion that for 10 years has interfered with sound management of the Mourning Dove. During that time the numbers of the birds have steadily declined, although there was a partial recovery in 1944 and 1945.

The question is: "What is next?" Some administrators and biologists are urging complete closure, action the Service is loath to recommend except in an unquestioned emergency. A suggested alternative would be short seasons in this entire region to open well after most of the nesting is *known* to have ceased. This would not be satisfactory to many gunners, but it would save many birds for next year's brood stock.



Speeds of Birds

A Bobwhite flies 28 to 30 miles per hour while a Mallard duck gets up to 50 or 60 miles per hour. The real speedster is the duck hawk who flaps along at a clip of 165 to 180 miles per hour. Mr. Swan travels about 55 miles during a complete turn of a clock's long hand. Of these birds, the one that really fools you is the Bobwhite. The noise his wings make when he is taking off makes you think he's going twice as fast as he really is. Therein lies much of the sport of quail hunting.

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in selecting the type of supplementary practices we initiate.

We are making progress in this direction too. Whereas in former years and in other states the emphasis has been placed on making annual plantings of grasses and grains, we are working out ways to create permanent pasture areas which will serve the dual purpose of supplying nutritive forage of a desired type, and less expensive to maintain. Although the optimum procedure has not yet been worked out, it is safe to say that we are making progress toward that end.

Regulation of Harvest to be Based on Actual Kill Records

At the present time seasons and bag limits are based on estimates of population and kill resulting primarily from casual (as opposed to systematic) field observations. This is necessarily so since there is no arrangement whereby we can secure actual figures on the big game killed. It is expected that a system for securing such information will be tested next year.

By getting the facts on where the deer are killed, how many, how large, how old, etc., we can more intelligently formulate plans for expanding or reducing bag limits and seasons, for restocking, for removal of excess doe deer by trapping, for creating additional public hunting grounds, and a host of other moves to improve the supply of big game.

The system of securing the kill records will favor one of those now being successfully used in other states. One of these calls for checking and tagging deer at checking stations set up by the County Game Protector at various points convenient to the hunters. In Pennsylvania tags and report cards are issued when the license is purchased. We believe that either of these systems will go a long way towards giving us the information we need to expand and improve our big game potentialities.

SUMMARY OF PROGRAM

In closing, it might be well to briefly summarize the main points of our big game restoration program.

1. **Creation of more herds of big game.**
2. **Creation of more refuges and public hunting grounds.**
3. **Development of more efficient habitat improvement practices.**
4. **Development of more efficient and equitable hunting regulations through a system of gathering information on game kill.**

DOVE HUNTERS!

DON'T FORGET TO TURN IN THOSE BIRD BANDS.

GET PERMISSION FIRST!

An Editorial

We are reaching a solution of the old Farmer-Hunter Problem

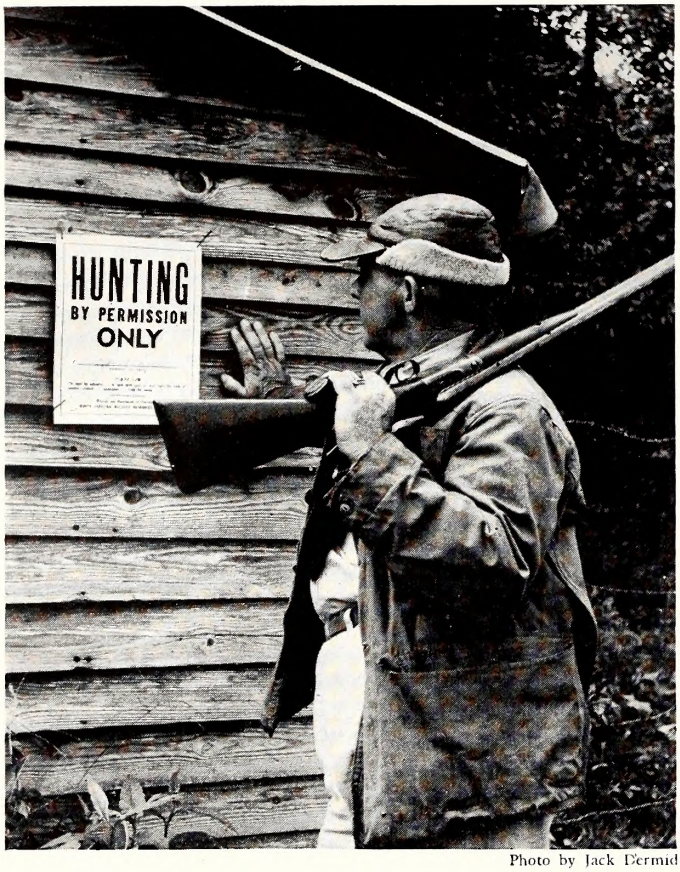

Photo by Jack Dermid

These signs have been successful in encouraging sportsmanship and reducing trespass. 40,000 were put up last year.

TAR HEEL hunters and Tar Heel farmers are getting together. As things look now, the old, old story of posted land, hard feelings, and trespassing is coming to what may be a happy ending.

For years and years hunters have complained that more and more land is being posted against hunting, and fishermen have complained about the way they were being excluded from their favorite fishing waters. At the same time farmers were counting the costs of broken fences, damage to crops, gates left open, plus papers and garbage strewn around their private fishing holes. The situation seems to have grown worse through the years. Now, however, the trend is taking a turn for the better. And printed pieces of cardboard seem to be the answer. Here is how the problem is being faced in North Carolina.

We talked to a lot of farmers in our travels about the state, and asked them questions about their attitude toward hunters. Always the same story: hunters are a nuisance and worse. This question was posed: "Would you allow people to hunt on your land if they came to you first and asked for permission?" In nearly every case, the answer was "yes."

People out in the country lead vastly different lives from those who inhabit cities and towns. They don't bump into a lot of strangers on the street, and they like to have folks visit them. But they object to having people sneak through the back fence and shoot up the countryside or help themselves to fish in the farm pond or a wandering rooster from the barnyard. On the other hand, farmers welcome people who do the courtesy of introducing themselves and asking permission to hunt or fish.

North Carolina has three laws with regard to trespass, one in the civil code and two in the game laws. These laws allow land operators to post their land to forbid any trespass whatever. Posted signs are the simplest way of keeping trespassers out.

Realizing the need for bringing about a better understanding between farmers and sportsmen, the Wildlife Resources Commission went into action. In 1949 40,000 posters were printed and distributed without charge to landowners who were willing to permit hunting on their land provided people asked for permission. Nearly 2,000 farmers requested and used these signs.

Although individual signs were inexpensive, 40,000 added up to a considerable figure, and for that reason the Wildlife Resources Commission was interested in finding out whether they served the purpose for which they were intended. Circulars were sent out to 500 farmers who requested the signs, with these questions:

Did the signs reduce the amount of trespassing on your land?

Did more, or fewer hunters ask you for permission?

Do you believe that these posters are worthwhile?

Do you think that the program should be continued?

Of the 500 farmers polled, 101 responded to the questionnaire. Ninety nine found that the signs reduced trespassing, and that more hunters asked for permission. These same farmers expressed a belief that the posters were worthwhile and that the program should be continued. Two landowners felt that the posters were not of any value. One of these was an absentee owner of a small tract without a tenant or manager on the land.

It was only natural to expect farmers to respond enthusiastically to a program which helped them

solve an age-old problem. No space on the questionnaire was provided for comments, but nearly all of those who sent in the questionnaires added comments ranging from "THANKS!" to the following comment by W. A. Tyree, of Durham:

"I am convinced that this program has brought more respect and cooperation from the farmer and landowners than most any phase of department activities. In this county and other counties near industrial centers the abandon and carelessness of some idle workers make the lot of the farmer a hard one. The opening day of the season on our farm before posters were put up there was an estimated 150 hunters, uninvited, shooting. The cattle broke loose, one was shot and fences were torn down. In fact, as a hunter myself, I wished that there were no game on our farm. After erecting posters, the game warden checking licenses, and some splendid patrolling by Warden Bob Logan, we again put our cattle in pastures and had very little trouble. My friends who are landowners agree that this gesture on the part of the department has done much to lessen the friction between sportsmen and farmers."

The approval of farmers was all very well, but it was the sportsmen's money that was spent to produce and distribute the signs. How did the hunters themselves feel about them?

We selected 500 names at random from the stubs of hunting licenses sold in 1949, and asked these hunters the following questions:

Did you see any "Hunting By Permission Only" posters last fall and winter?

Do you believe that these posters help to cut down on trespassing?

Do you believe that these posters cut down on the amount of land available to hunting?

Do you believe that the poster program should be continued?

The response to the questions was a little less enthusiastic than that of the farmers, in that only 85 returned the questionnaire. Of these, 62 were definitely in favor of the program, and believed that the signs reduced trespass without reducing the amount of land open to hunting. Five of these, however, did not see any signs, but liked the idea anyway. Five correspondents replied that they had seen no signs, and therefore expressed no opinion as to their effect on trespassing and hunting. Of the 20 who opposed the idea, seven had not seen the signs.

Although only a small sample of farmers and sportsmen were contacted, the figures indicate that an imposing majority of both farmers and hunters favor the poster idea.

Once an idea catches on, you can count on folks improving it. So many of the farmers who wrote in for hunting signs requested similar signs for fishing that we have had 10,000 printed and ready for distribution to farm pond owners. The farm pond signs are exactly like the others except that the word "fishing" is substituted for "hunting" and the law pertaining to fishing without permission is quoted in part. The use of "Fishing by Permission Only" signs will be restricted to waters which are privately owned, or for use by land holders who live along public waters and want to control access to such waters through their premises. No one will be allowed to use these signs for posting public waters.

Here is how either type of poster may be obtained: Contact your local fish and game protector, or write to the Raleigh offices of the Wildlife Resources Commission, for an application form. This form has space for noting the number of miles or fractions of miles facing on public roads in the case of hunting posters, and the number of acres of private waters in the case of fishing posters. Where the fishing posters are to be used to prevent trespass on land adjoining public waters, such as a large lake or a river, they must be placed so they can be read only from the land side and in no way prevent fishermen in boats from using public waters.

No one knows how far these posters will go toward bringing about a happier relationship between farmers and sportsmen, but if the demand for them continues, it appears that a lot of North Carolina

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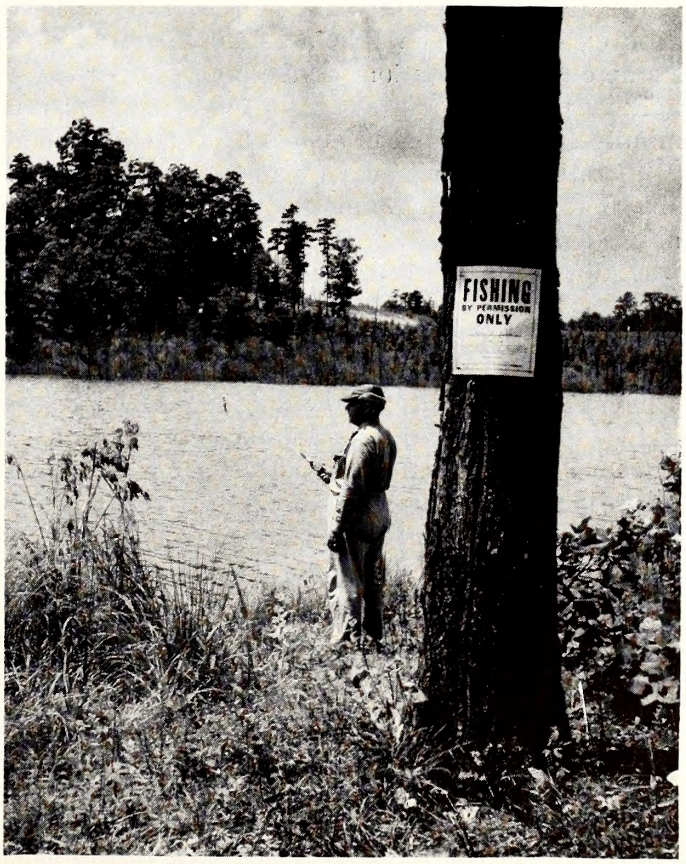


Photo by Jack Dermid

To help farmers control trespass on their farm ponds, signs such as this are ready for distribution.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

In just about one week from now our blood pressure will be up to boiling—we're going hunting! Deer, bear and squirrels are the targets assigned throughout large areas of the state for October 16 and the welkin will ring to the music of hounds on the trail of the bear in Cherokee, Clay and Graham counties. No matter how thrilling the huntsman's music may be, there should be a sobering theme woven through the glitter to give contrast. Our attention again should be directed to the fundamental keystones of the sportsman's code. The American heritage and privilege of hunting and our state license are not the green light to indiscriminate slaughter and careless waste—either kill clean or miss clean. If by chance an animal is wounded, stamp on the temptation to give immediate chase—light up a smoke and sit down for at least fifteen minutes. If the wound is as serious as a careful and deliberate shot should have made it, you will probably find your trophy lying not very far from where he was when you shot. On the other hand, if the wound was the result of a careless or hasty chance taken when even you thought the chances were slim, the animal probably would not call on his reserve power to escape by speed. You would have a much easier trail to follow and perhaps a second chance to reduce him to possession.

Above all, hunt safely. No piece of meat brought home is more tragic than the result of a hunting accident and certainly no game animal justifies a shot that might endanger the life of another. Until the advent of the A-bomb, guns and gunpowder were among the chief agents of sudden death and the combination of gunpowder, alcohol and gasoline provide a hazard that few of us want to face and none of us can control.—W.D.

Dr. E. T. Dickinson, of Wilson, N. C., writes as follows:

"Last week while visiting a family near Fremont, N. C., the lady of the house told me she saw a large snake hanging on to a teat of her cow which was standing still as if being milked as usual. Now is this unknown, unique, common or the custom in some countries. I could vouch for the integrity of my informant."

All that we can say is that such popular beliefs as attend the activities of snakes have never been supported by the writings of scientists who have spent lifetimes attempting to prove or disprove them. Also conspicuous by their absence are any photographs whatever of a snake milking a cow.

It is not often that we find a long letter that we can reprint in its entirety, but the interest and earnestness of the following from Mr. Guy Abell, of Smithfield, N. C., merits more than casual treatment:

"Your articles in the series "Let's Learn About Our Wildlife" prompt me to write to you concerning an experience that Mr. L. K. Jordan, of Tarboro and I had five weeks ago.

"Mr. Jordan and I had the good fortune to marry girls from the same town in south Georgia (Albany) who were, in fact, best friends in their childhood days. When the Jordans moved to Tarboro recently the two ladies planned a weekend get-together. L. K. and I, more or less in self-defense, decided that the simplest way out for us men was to go fishing, but, if you will remember, that weekend was one of the wettest in eastern North Carolina. It had been raining for days—and all the streams were either very high or muddy—usually both. The result was that we drove as far east as Columbia in Tyrrell County on Saturday afternoon looking for clear water. The Scuppernong River there was discolored (the only time I have ever seen it so) and high, but since it was late we decided to spend the night there and have a try Sunday morning. It rained all night the night of the 8th and well into the morning of the 9th—there was water in the hotel lobby Sunday morning and portions of the paved highway to Plymouth were under water. The sun shone briefly at about 8:30 a.m. and L. K. and I, after the manner of all fishermen, decided to have a try at it regardless. Stupid? I suppose—but I will always be glad that we went.

"We rented a boat and motor from Roy Owens at the bridge and started up river hoping to find some clearer water in one of the tributary creeks. There were a few others of sufficiently low intelligence to be out in such weather, and we passed two boats of such dimwits a few hundred yards up from the mouth

of the first creek on the left upstream from Columbia. Just around the bend up the creek from these two boats it happened. L. K. was in the bow using a fly rod and I was in the stern using a paddle and getting in an occasional cast with my spinning outfit. We were not making very much noise, but we were not being particularly careful either, because it was about noon and we had had absolutely no luck with the result that we were becoming somewhat disgusted—but in a philosophical sort of way, if you know what I mean, because we didn't really expect much under the circumstances. We noticed an animal swim out of the bushes about fifty yards above us and start across the creek, which was less than thirty yards wide at that point. The motor started at the first pull and we were able to cut the animal off in midstream. The result was that we got a very good close-up view of the varmit as it turned and swam back to the creek bank from which it came. We were within three or four yards of it. It was some member of the cat tribe, six to seven feet long, had a round head approximately the size of a man's and had a tail that looked to be about two feet long, but this is the one point which it was hard to be absolutely positive of. The color of the animal was solid fulvous with no spot or stripe showing on the head or on any portion of the animal that was visible above water. Of course, there is no way of knowing the weight of the beast, but I believe that it would run a hundred pounds or better. Since the creek was in flood, the water was out of the banks and the animal had to swim through some bushes as he went to shore. This hid from our view his actual climbing out on the bank. I tried to remedy this situation by ramming the outboard motor boat squarely into the brush right on his heels, but this brought forth a loud squawk of protest from L. K. who violently objected to being sacrificed in the interest of scientific research. Anyway, the cat disappeared like a flash the moment he reached shore with the result that we were unable to see him out of the water.

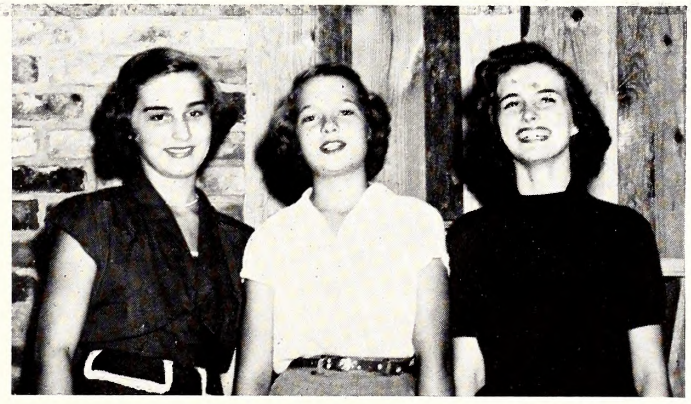
"L. K. is absolutely convinced that the animal was a puma, and had I been anywhere where cougars were known to exist there would have been no doubt in my mind that such was the case. The only other possibility is that is was an outsize wildcat, but we both felt sure that we saw a long tail on the beast—we could not be absolutely positive, because of the wake the animal made. I have never seen a bobcat that remotely approached this animal in size, and I have seen several in captivity, two in the wild, and some stuffed. I have read from time to time of "panthers" being seen and even taken in eastern N. C., but I was always a doubting Thomas. Of course, I realize that they were here in Colonial times, and that some are still in Florida, but I never could quite believe, lacking proof, such tales from this area. There was a .22 rifle in my car, but we didn't take it with us in the boat—I wish that I had done so, because I couldn't have missed the varmit at point blank range. It isn't that I have anything against him or any of his tribe—it's just that I am growing weary of my friends rolling up their pants legs when I get about half way through my story. Some of them have even suggested that what we saw was an otter. I have been hunting and fishing all my life in eastern N. C. and I know an otter when I see one—especially at such short range—remember we were right on the heels when he went into the brush. Anyway this animal was much larger, lighter in color (almost exactly the color of a deer), but a poor swimmer (he did not swim very swiftly and made no attempt to dive, but swam after the fashion of a dog). My theory is that the flood had driven him from his normal haunts and that he was looking higher ground on the other side of the creek. One more thing—Mr. Jordan and I were cold sober.

"I trust that you have been able to wade through this far and find the story interesting and will leave your pants cuffs where they belong, because every word is true."

Not many people know of the existence of Russian boar, muskellunge or Florida gallinule as regular residents of North Carolina, yet they are included in the game species each year. Can it be possible that a very few pairs of cougars still exist in our more isolated areas? Again we appeal to you, our readers for confirmation of these rumors. Photographs and measurements of tracks would be valuable, and in addition, we should certainly appreciate prompt information when and if any other sportsmen have similar experiences.

(Continued from page 21)

land which is now prohibitively posted will be opened to hunters who ask for permission. Because of the costs involved, the Wildlife Resources Commission hopes that the idea will catch on and individuals will have their own signs made. It would take a carload of posters to cover Tarheelia's 278,463 farms and her thousands of private ponds, and the friendly feeling wildlife clubs could inspire from farmers would make printing and distributing these signs a really worthwhile club project.



Miss Wildlife of Mecklenburg County

Above, center, is Miss Mary Froby, Thompson Orphanage, Charlotte, who was selected "Miss Wildlife of Mecklenburg County" at a beauty contest held by the Mecklenburg County Wildlife Club late in September.

At left is Millie Morris, Hickory Grove, and at right is Doris Davis, Cornelius, runners-up in the Mecklenburg contest. Wildlife clubs throughout North Carolina were having meetings and staging beauty contests to select their candidates for the title of "Miss Wildlife of 1950" at a beauty and talent contest to be held in Raleigh October 16 and 17 in connection with the annual State meeting of the N. C. Wildlife Federation.

SEE THIS LEG BAND?

SAY, NEIGHBOR, IF YOU WANT BETTER DOVE SHOOTING, PLEASE RETURN THE BANDS FOUND ON THESE BIRDS TO THE U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. IT WILL HELP THE MEN WHO ARE TRYING TO KEEP OUR GAME ABUNDANT.

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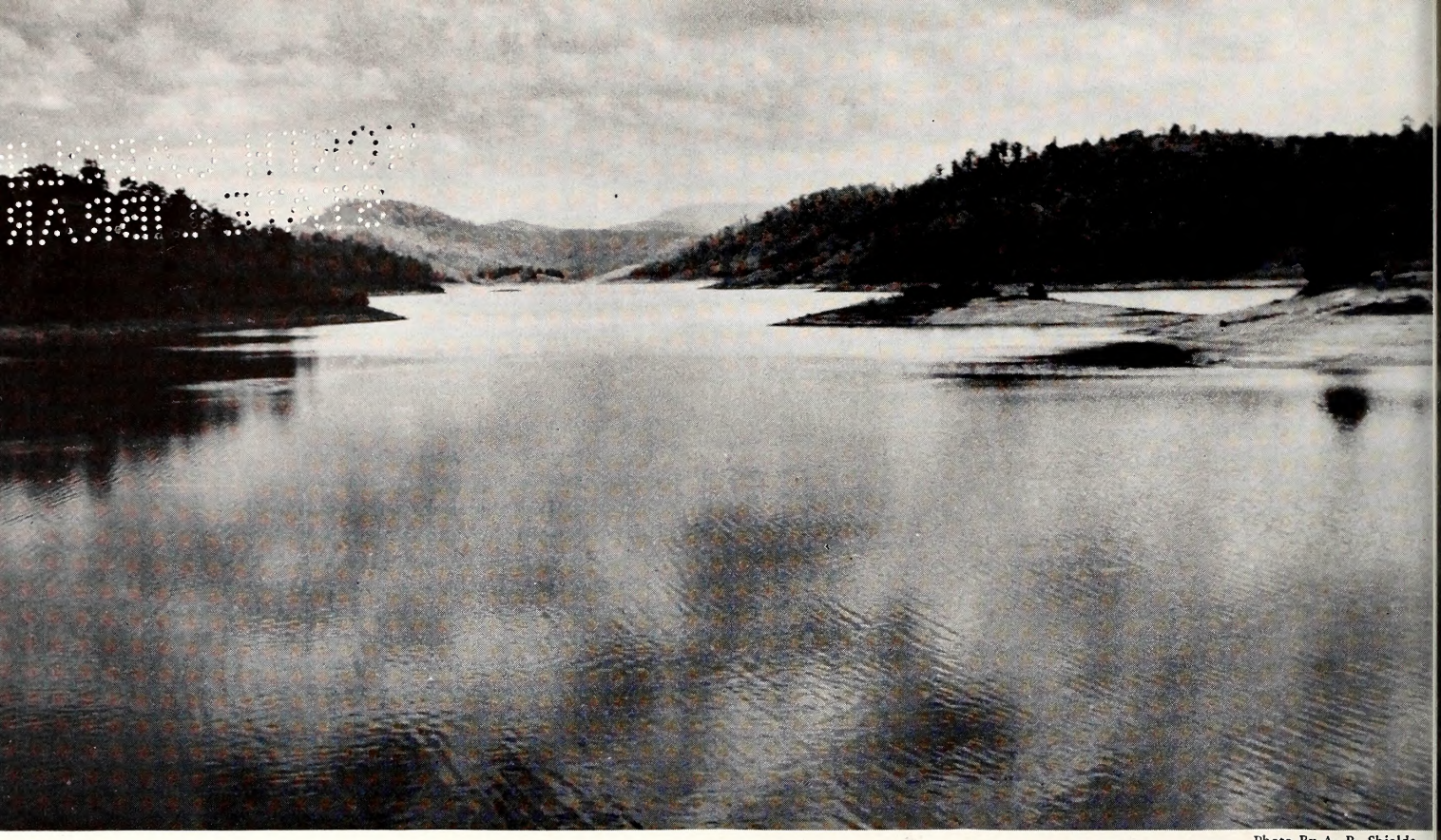


Photo By A. R. Shields

LAKE SURVEY

Photo By Jack Dermid

During the past summer, fisheries biologists of the Wildlife Resources Commission made an extensive survey of fifteen North Carolina lakes. These chemical, physical, and biological inventories were taken to provide a sound basis for future fish management practices.

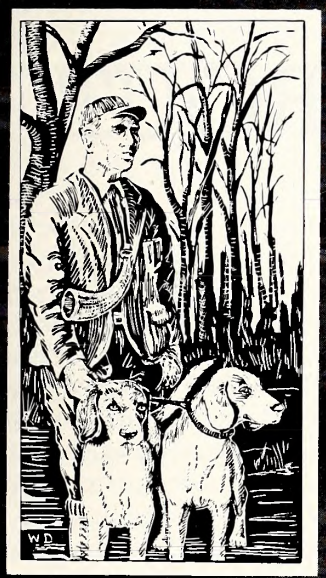
Among the lakes surveyed were Glenville (above) in Jackson County, Badin, Tillery, and Blewett Falls of the Yadkin River chain, and Hickory, Mountain Island, and Catawba of the Catawba River chain. An important part of the survey was the study of existing fish populations. At left, Duane R. Raver (right), fisheries investigator, and Edward Bradley, State College student, measure and tabulate fish taken from Glenville lake.

Next summer the survey crew will investigate lakes and streams in the Coastal Plain.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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November, 1950 Vol. XIV, No. 11

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
MARTY MABRY, Circulation
JACK DERMID, Photography

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COVER

The whitetail deer is North Carolina's most important big game animal. Donat used oils to portray this beautiful buck, and would probably rather shoot than paint one.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-second of a Series on The Wildlife Species of North Carolina

NORTH CAROLINA TROUT

By ROD AMUNDSON

History

TROUT fishermen have a very high regard for their quarry, and you might make an avid trout fisherman a little bit unhappy by telling him his prized trophy lies somewhere above eels and below suckers in the biological arrangement of fishes. Such a bit of rather useless information (to him) will in no way affect his high regard for one of the gamest fish to be found in our fresh waters.

Trout fishermen, those who are sufficiently enthusiastic about the sport to risk their bones on slippery rocks and who will fish with frozen lines and icicles on the tips of their rods, contend that the trout is far superior to any other game fish in fighting ability, intelligence, and flavor. He may even consider trout fishermen to be a little superior to anglers who prefer the still pools where bass and bream lurk. Trout fishing is probably the most highly publicized of all types of angling, and there is a whole world of literature to be found concerning trout and the men who fish for them.

Photo By A. R. Shields

The end of a day on a trout stream.

Although three species of trout are now found in North Carolina waters, only one is native—the Eastern Brook trout. The other two, browns and rainbows, were introduced many years ago, and have supplied a great deal of food and sport since their introduction.

Many Tar Heels today remember when they could go to a trout stream and catch all the trout they could carry home. But that was before paved highways found their way to all but the most inaccessible streams, pouring out an army of eager anglers each year. And it was before heavy timber cutting, wanton burning, and pollution cut down the mileage of good trout streams which at most were confined to the mountain section.

Increasing demand and decreasing amounts of trout waters have made trout fishing almost a competitive sport—fishermen competing for fish on opening day before hand-raised brooks and rainbows were taken away. This same demand and shrunken habitat makes necessary the expenditure of thousands of dollars annually to raise trout for stream stocking. The only alternative would be to say "farewell" to North Carolina trout fishing. Trout are essentially fish of the primitive stream, and this is essentially true of the native brook trout.

Although Tar Heel trout are similar in habitat, general appearance, and in spawning habit, enough important differences present themselves to make a discussion of them separately worthwhile. They are members of the salmon family, and similar to salmon in habit, if not in size, and in general body conformation.

THE BROOK TROUT

Description

As has already been pointed out, the brook trout is native to the streams of the Appalachians. The body is elongated, and the head is large in proportion to body size. The ground color is grayish to greenish, darkest dorsally. Wild fish have bright red or orange spots on the sides, but in hatchery-reared fish these spots may be light gray or yellowish. The back is more or less mottled with dark olive or black markings, as are the dorsal and caudal fins. The pectoral, ventral and anal fins are marked with a cream or orange colored band anteriorly, then a dark band, with the remainder of the fin a dusky color, often reddish in males. The belly may be bright orange, or brilliant red, especially in the breeding season. The male fish is more brilliantly colored than the female, and the intensity of color varies greatly in different types of water. Brook trout caught in lakes in North Carolina are usually lighter in color than those from the small headwater streams. The scales are small, over 200 in lengthwise series. Male brook trout develop a pronounced hooked jaw or mandible. The female's head remains shorter and rounder. There is not more beautiful fish than a wild-spawned brook trout, taken from a spring-fed mountain stream.

Distribution

The brook trout ranges from the waters of eastern Canada to the streams of the southern Appalachians, and because its tolerance for warm water is very low, is seldom found in streams below an elevation of 2,000 feet, and most of the brook trout in North Carolina are found at 3,000 feet or above. There is very little natural reproduction below this level.

Food Habits

Although brook trout will feed on smaller fish such as minnows, most of their diet consists of small insect life taken from the surface. Since streams ideally suited to brook trout are cold the year around, the production of natural food is slow; this may be a clue to the rather slow growth and comparatively small size of the brook trout.

Reproduction

Where most fish naturally spawn in the spring and early summer, the brook trout begins the reproduction in the autumn, about the time the leaves have reached the peak of their brilliant color. Only small streams with clear water and with gravel-bottomed pools provide a natural spawning habit for brook trout. Such streams are extremely scarce in North Carolina, and thus relatively few naturally-produced brook trout are taken by anglers.

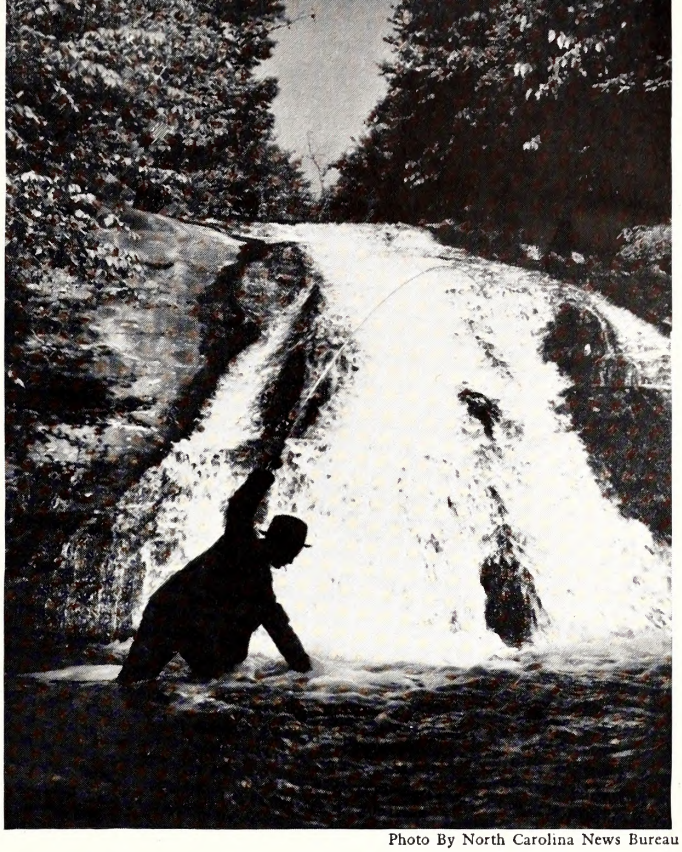


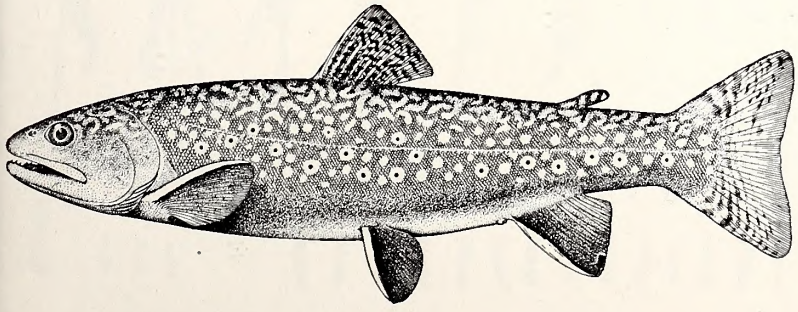
Photo By North Carolina News Bureau

Trout are creatures of "white" water streams.

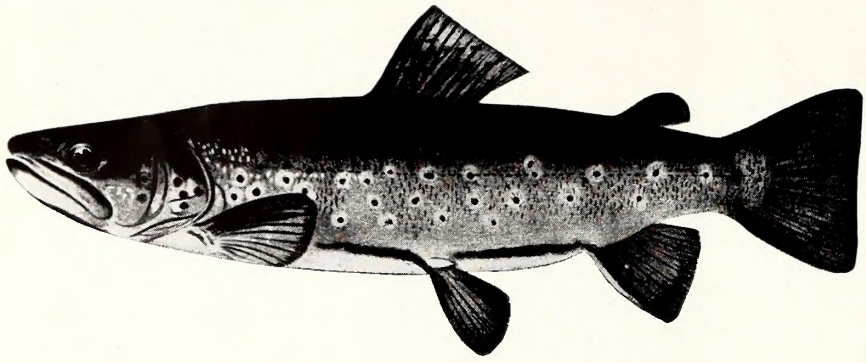
The eggs are deposited in the gravel at the bottom of the stream, and become attached to small pebbles. They are fertilized in the usual manner, and remain in their watery bed until spring. This long incubation period makes the eggs highly vulnerable to floods and other forces which might destroy them.

Angling

In addition to a shrinking habitat, the willingness of brook trout to take natural and artificial lures has been their downfall. A patient angler can work over a stretch of stream and almost entirely remove the brook trout from it. Brooks are extremely gamy fighters despite their small size. A few are taken up to 16 inches in length, but most are in the seven and eight inch class or even smaller. They spawn at six inches in length; thus the brook trout angler does not expect to take many larger than that size. But these small fish fried in bacon fat over a campfire have a flavor that can be approximated by few dishes.



The brook trout is the only species native to North Carolina. They are seldom taken below 3,000 feet elevation.



The brown trout was imported from Europe, and has become a popular fish. Note white haloes around dark spots.

Management

Because of the scarcity of natural spawning waters, brook trout, to provide anything like good fishing, must be hatchery-reared and stocked. Where they can be fed artificially in rearing pools, it is possible to rear them to a size somewhat larger than naturally produced fish, but anglers who have caught them fresh from the hatchery complain that the flavor is nothing like that of natural fish.

It is apparent that brook trout fishing will exist in this state only so long as they are reared in hatcheries and stocked for each season's fishing.

BROWN TROUT

Description

The ground color is brownish, lighter below, darker above, with numerous black spots. Some of the dark spots are irregular in shape and have a border of lighter color. The ventral, dorsal and anal fins have a light, sometimes yellowish margin. Brown trout receiving natural foods have scattered red and orange spots on the sides, the red spots appearing pale in hatchery specimens. Sexual differences are similar to those described for the rainbow trout. There are from 100 to 125 scales in a lengthwise series.

Distribution

Brown trout were found originally in Northern Europe, and many people call them "German brown trout." They were introduced to North Carolina waters in about 1905, and the records are not clear as to whether they came directly from Europe or were brought in from some other state where they had been previously imported.

In North Carolina their general range is similar to other trout, but their tolerance for higher water temperatures makes possible a wider distribution in the mountain streams.

Reproduction

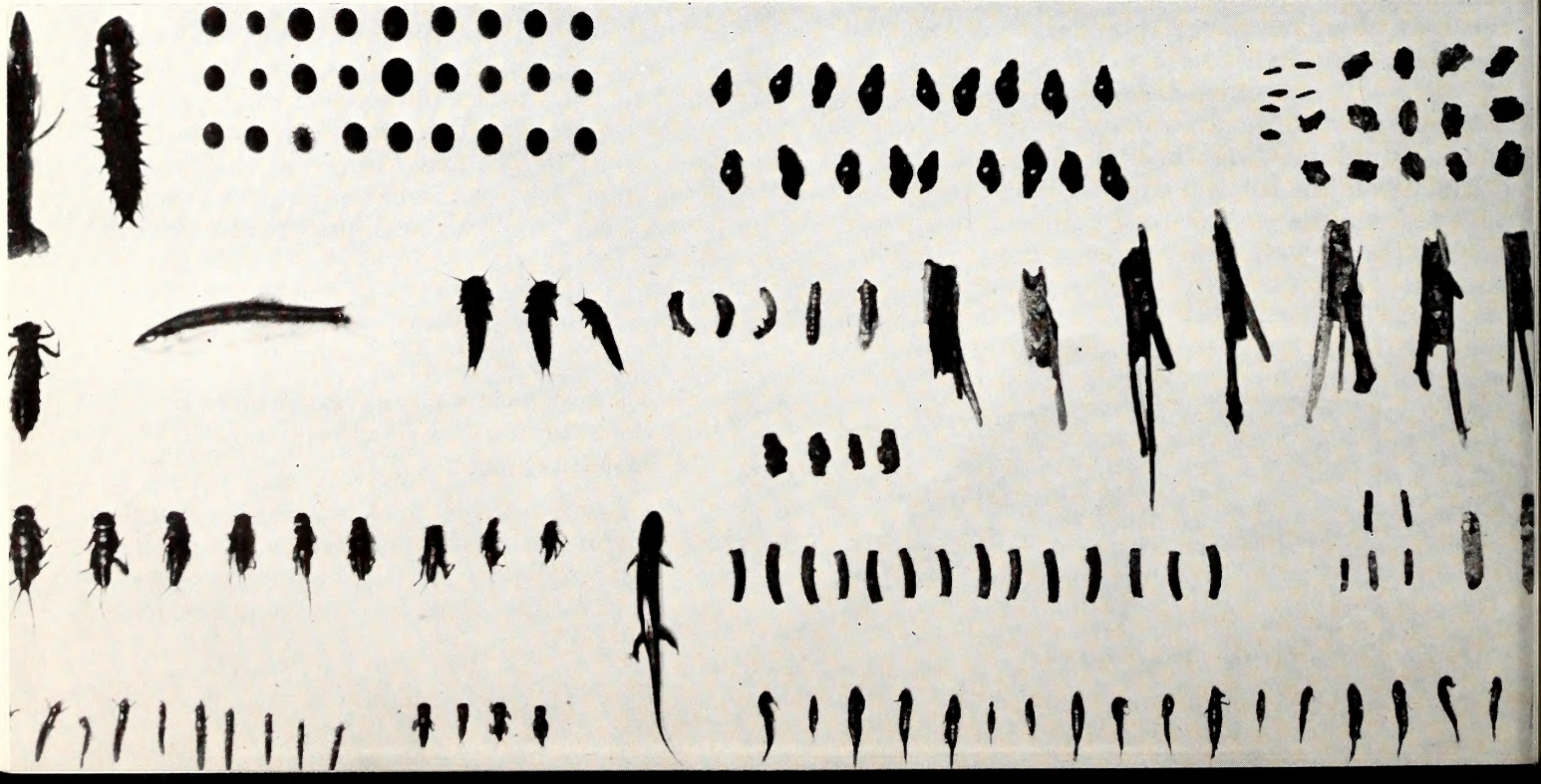
The brown trout is a late fall spawner, and for this reason may compete with the brook trout for natural spawning areas, and in the hatchery require more careful attention than either the brook or the rainbow. After reaching the fingerling size they grow rapidly, and attain much greater size than the brook. The largest brown trout taken in North Carolina up to the fall of 1950 was a 31-inch specimen weighing a little over ten pounds.

Food Habits

Being in general a little larger than the brook, the brown trout may take more smaller fish than

Trout foods from a mountain stream. First row: crawfish, hellgrammite, water pennies (beetle larvae), snails, caddis fly pupae and cases. Second row: dragon fly nymph, minnow, stone fly nymphs, caddis fly larvae and cases. Third row: stone fly nymphs, salamander, caddis fly cases. Fourth row: burrowing mayfly nymphs, crawling mayfly nymphs, jumping mayfly nymphs.

Photo By Jack Dermid



the former, but its diet consists mainly of aquatic insects and other small aquatic life.

Angling

The brown trout is undoubtedly more timid and wily than the brook trout, and hence a more difficult prize for the angler. They will take natural bait such as worms and minnows, and an endless variety of flies and other artificial lures. These latter must be weilded with skill to fool the cautious fish into rising to the bait. Once hooked, brown trout provide a worthy battle in proportion to their size.

Management

Because their spawning requirements are very similar to those of the brook trout, browns have to be hatchery-reared and stocked in suitable water. The usual practice is not to stock brown trout in streams where rainbows and brooks are already providing suitable sport.

THE RAINBOW TROUT

Description

The rainbow trout is readily recognized by its silvery color, which becomes darker and greenish above, by a pattern of small black spots which are more numerous above the lateral line, and by a reddish band which is usually present along the sides from the head to the tail. This band may be absent in young fish or in those reared in a hatchery. In nature, the band develops in almost all fish, and may vary in color from pinkish to bright red or purple. Especially brilliant adult fish have a splash of red on the sides of the head, and have the paired fins and ventral areas reddish. Young rainbows have a series of vertical bars known as "parr marks" along the sides of the body. These disappear with maturity.

The relation between length of head and total length varies with age and sex. Younger rainbows have a larger and longer head in proportion to total length than do older fish. Also adult male fish usually have longer heads than do female fish of the same age or total length. The adult female rainbow is usually more robust than is the male. The scales along the lateral line vary in number from 135 to 145. The caudal fin is slightly concave.

Distribution

Where fishermen on the West Coast got the rockfish from eastern anglers, the transfer was made reciprocal with the introduction of rainbow trout to eastern waters from their West Coast habitat.

Trout must have cool water in order to survive.

Incidentally, the rainbow has been stocked in every state between the two coasts where trout water is available. The rainbow prefers swift, white-water streams, but will do well in cool lakes and ponds. It first came to North Carolina in 1880, and is now found in all of the streams capable of supporting any kind of trout.

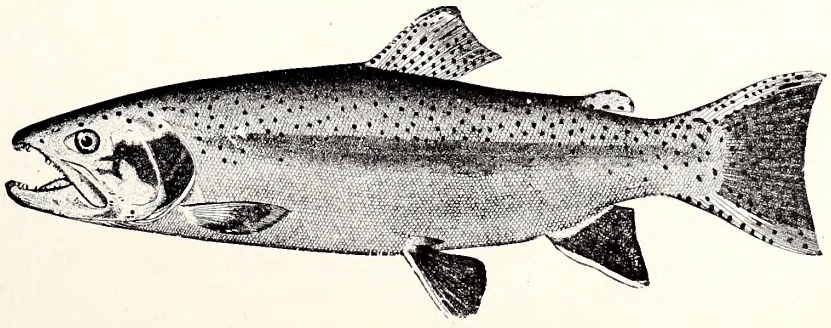
Food Habits

The rainbow trout is the largest of the North Carolina species, and hence depends on other fish for food to a greater degree than the brook and the brown. In streams it does not reach outstanding proportions, and feeds largely on insect life and other aquatic living forms. In lakes, however, it may grow large enough to take large minnows and small specimens of larger fish.

Reproduction

Although all trout are closely related to the salmon, the rainbow comes closer to the others in the life cycle. The rainbow may spawn in a small stream with a suitable bottom, and spend its days in the swift waters. But recently a different phenomenon has come to public attention. Rainbows may be spawned in a small stream, then migrate down to a

(Continued on page 23)



The rainbow trout was imported to Carolina from the West Coast. It is the largest trout in our streams and provides an abundance of sport.

Facts Every Sportsman Should Know

YOUR GAME PROTECTOR - AND WHY

By G. A. JONES, Jr.

Chief, Law Enforcement Division

GAME protection is as old as the love of the chase. Medieval kings and lords awarded to their knights, as an honor for good services in the defense of the kingdom or province, the position of gamekeeper, which was sometimes accompanied by the presentation of a military honor, or the conferring of a title. These "wardens" were placed in charge of the hunts, and were given the duty of keeping

Many fallacies have arisen about our game protectors since the first appointments were made in 1927.

trespassers off the lands of the lord, often with minor authority in connection with the safety of the ruler's land. High sheriffs might have been the supreme enforcement power in the larger populated areas, but these "wardens" were highly regarded and much in demand when the need arose for police protection in the rural areas.

Today's game protector in North Carolina is a far cry from the heralded and knighted "warden" or gamekeeper of those romantic times, but his duties and responsibilities have not been diminished by the passage of intervening centuries. The increase in specialization in all branches of civilized life has lead to the necessity and demand for a specialist in law enforcement relating to protection of game and fish. Today's modern methods of escaping the effect of the law have led to the need for modern methods of enforcement. Your Tar Heel game protector is the public officer, trained in this specialist field, who is producing for the sportsman-conservationist the desired results and coping with the problems which today's violator creates.

Many popular fictions have arisen about the legal guardians of the game and fish resources of North Carolina since the first salaried warden appointments were made in 1927. Some of these have added to the dignity and respect which are the rightful due of one in this office—but more often they have detracted from the value of the work which he is doing, and have created about him the attitude of the average citizen that he is a pensioner, or a favorite of same candidate holding this job through political maneuvering.

The status of the game protector in North Carolina today is governed by statutes established for the protection of wildlife by far-sighted legislators who represented the people of the State in the 1935 General Assembly. While many of the problems which faced those law-making conservationists have been changed, the basis is still the same, and the machinery under which the protector carries out the responsibility of his office remains unmodified.

One of the most popular of the misconceptions about the protector is that he is "prosecution hungry," and that his monthly income depends upon the number of arrests resulting in "guilty" verdicts he obtains. The fallacy in such system, which would allow vast injustice and discrimination in enforcement, was seen by the governing body of 1935, which provided that 'No fee shall be taxed in bills of cost for the use and benefit of a game

Your game protector is not "prosecution hungry," but the law requires him to bring violators to trial.

protector or deputy game protector, who appears at the trial of such case.' (G. S. 113-92). Today's game protector, under the Wildlife Resources Commission, is a regularly salaried officer of the State, and is forbidden to accept payment for any services performed in connection with his duties, other than his salary which is paid in its entirety by the Wildlife Resources Commission in accordance with laws governing payment of salaries to all State employees. The law provides that the arrest fees, taxed as a part of the bills of costs for game and inland fish law violations, as well as the fines impressed for violations, shall be paid into the general school fund of the county where the violation took place. Thus, the protector is enabled to carry on his duties without dependence upon financial return from arrests, and the schools, as well as the sportsmen, benefit from his activities.

Another popular fallacy is that the protector is appointed by some individual as a reward for partisan political support. Under the Wildlife Resources Commission, the appointments of game protectors have been and are being made after written competitive examination and carefully adjudged oral interview. Today's protector, in fact, is carefully investigated to determine if his past political affiliation has been such as to render him incapable of carrying out the duties of his office in an impartial, unbiased, and just manner. When a vacancy occurs, all applicants for the position are given a written examination to determine the extent of their knowledge on North Carolina wildlife, the laws providing for its protection and the modern methods governing its management and administration. Those whose written answers are adjudged satisfactory according to pre-established standards are then interviewed to determine personality fitness. Record of past employment and activities is also investigated and carefully considered. Only those men who can satisfactorily meet these standards are selected, and they are appointed on a probationary basis for the initial six month training period. It is not really necessary to add that very few men who pass the initial screening process are found deficient during their probation period, making it necessary to replace them with other men.

Sometimes, remembering the past, it is easy to believe that the game protector is free to hunt and fish as he likes, spending as much of his time as he desires in pursuit of his own favorite recreation. As with other erroneous ideas, this is not the case with the modern Tar Heel protector. Perhaps there is no other group of men, certainly no group of public officials, who, by the very nature of their jobs, are required to spend more time in the active performance of duties assigned to them. Hunting and fishing holidays for other citizens are the heaviest working days for the protector. His duty is to insure, through enforcement of the laws and regulations, that the Commission's slogan "equal opportunity for all" becomes a true reality. On many occasions his days afield are followed by nights during which he tracks down and apprehends the ruthless violator who thievishly resorts to the use of dynamite for fish, or the spotlight for the helpless, blinded game animal. These duties and activities are designed to insure that all anglers and gunners get only their fair share of the surplus and to provide more sport for more people.

The modern game protector uses modern equipment. Air to ground communication is an effective tool.

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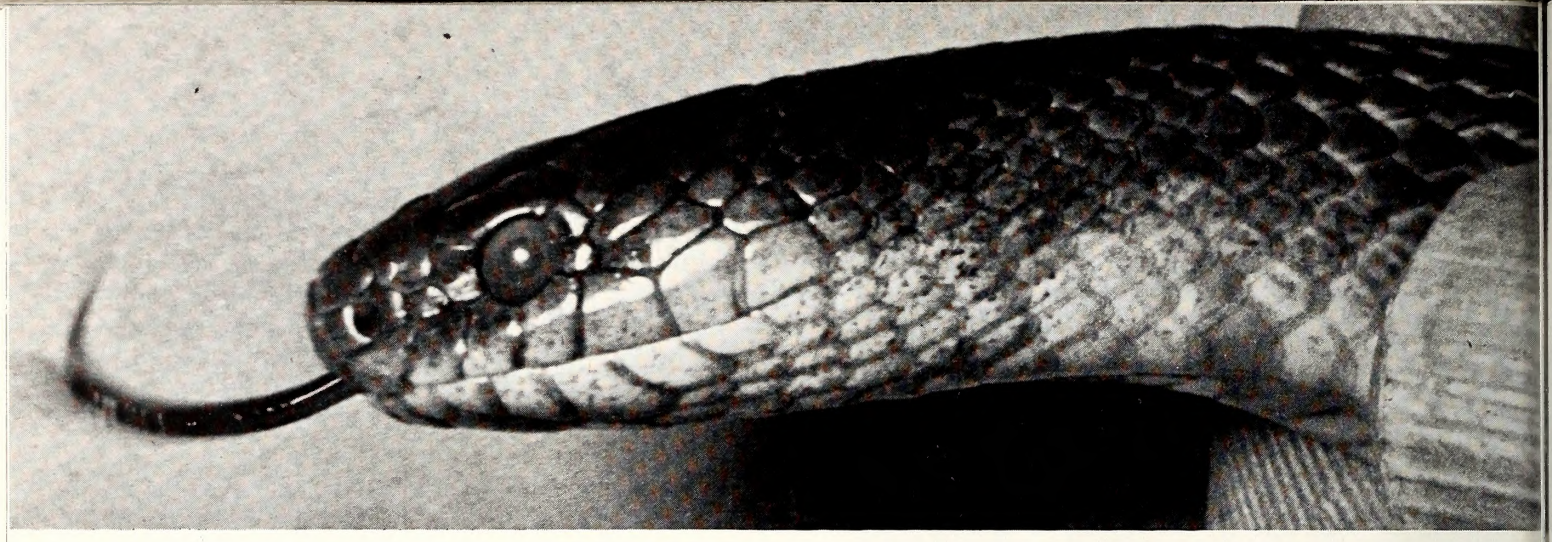


A shutter speed of 1/400 second failed to stop the fast-moving tongue. The clouded condition of this brown king snake's eyes indicates that it will soon shed its skin.

THE SNAKE'S TONGUE

Story and Picture By Jack Dermid

SNAKES and false beliefs go hand in hand. If all the snake tales in the United States were tabulated, they would probably surpass the number of species of snakes. Judging by the volume of stories, snakes are the most misunderstood of all wild creatures. And the most misunderstood portion of a snake's anatomy is its tongue.

I have had children, laymen, and college graduates alike to tell me that snakes can sting with their tongues. Some even believe that poisonous snakes inject venom with their tongues, the forked condition being especially designed for that purpose. Both of these common beliefs are false. A snake's tongue is no more a stinger than that of a dog. How could it be? It is a very delicate muscular organ, long and slender, soft, highly flexible, round, and divided at the end into two fine tips. Nothing could be less harmful. The tongue, however, is one of a snake's most important structures.

First, it aids the snake in the sense of smell. The tongue itself does not detect odors; but the tips, being moist and delicate, pick up minute particles when the tongue is flicked out and transport them to two small pits located in the upper part of the mouth. Known as Jacobson's organs, these cavities are lined with sensory cells which are capable of receiving odors. The second important function of a snake's tongue is one of touch. Whereas we feel with our fingertips and skin generally, a snake is covered with a layer of scales, and, with certain exceptions, its body is not very sensitive to touch. Thus a snake feels with its tongue.

While posing for the above photograph, the brown king snake repeatedly flicked out its tongue, directing it to the left toward the background of blue oilcloth. Its mouth was closed, for its tongue was extended through a notch in the lower jaw. The forked tip touched the surface very lightly and was withdrawn. It was the snake's way of learning of its surroundings, of the odor and texture of the oilcloth. A rattlesnake would use its tongue the same way in following the trail of a mouse it has previously bitten. Then after finding its victim, the rattlesnake would examine it with a few flicks of the tongue before swallowing it.

A snake cannot taste with its tongue, for taste buds are lacking. Since snakes swallow their prey whole, there is no need for this sense; besides the tongue is withdrawn into a protective sheath in the floor of the mouth when a snake bites or swallows its meal. It is fitting that a structure as important as the tongue be given adequate protection, for a snake would be severely handicapped without it. However, I once captured a black-chicken snake with the end of its tongue gone. It still flicked it out regularly, but without the delicate tips the snake must have been somewhat lost.

Laymen alone did not originate all the beliefs about a snake's tongue. Many scientists formerly advocated, some probably still do, that snakes hear with their tongues. They believed that the sensitive tongue received sound vibrations from the air. It has been generally proved, however, that snakes are deaf. The ear is degenerate, even lacking external openings as can be seen in the photo. Thus any noises or vibrations detected by snakes must come to them through a solid medium and not through the air, such as footsteps causing vibrations in the ground on which one is coiled.

The next time you see a snake, watch it move across the ground. If it is not frightened, watch how leisurely it moves and how frequently it protrudes its tongue. Watch it "feel and smell" its way along. The tongue is not used alone, though, for a snake has very keen eyesight and also uses its nose for smelling.

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

BY THE END OF OCTOBER THE OUTBREAK OF SCREW WORMS WHICH HAD BEEN PREDICTED BY ENTOMOLOGISTS HAD NOT SHOWN UP IN THE STATE'S DEER HERDS, AND THERE HAVE BEEN NO REPORTS OF ANY SERIOUS INCIDENCE OF THE MYSTERIOUS DEER DISEASE WHICH AFFLICTED DEER LAST SUMMER AND FALL. DEER HUNTERS WERE HOPING THAT NEITHER OF THESE AFFLICTIONS WOULD SHOW UP IN YEARS TO COME.

THE NORTH CAROLINA WILDLIFE FEDERATION HELD ITS ANNUAL STATE MEETING ON OCTOBER 16 AND 17 IN RALEIGH. AMONG IMPORTANT ITEMS DISCUSSED WERE THE FEDERATION'S PLANS WITH REGARD TO THE 1951 LEGISLATURE. THE FEDERATION HAS TAKEN A STRONG AND ACTIVE STAND AGAINST STREAM POLLUTION, AND PUBLIC SENTIMENT AGAINST POLLUTION SEEMS TO BE GROWING BY LEAPS AND BOUNDS. OTHER STATES ARE GETTING EFFECTIVE ANTI-POLLUTION LEGISLATION AND ARE MAKING STRIDES IN CLEANING UP THEIR STREAMS. THE FEDERATION BELIEVES THAT THE SAME THING CAN BE DONE IN NORTH CAROLINA.

SEVERAL EMPLOYEES OF THE WILDLIFE RESOURCES COMMISSION ATTENDED THE ANNUAL MEETING OF THE SOUTHEASTERN ASSOCIATION OF FISH AND GAME COMMISSIONERS AT RICHMOND, VIRGINIA. THE MEET WAS HELD ON THE SAME DATES AS THE N. C. WILDLIFE FEDERATION MEETING.

THE EIGHTY-FIRST CONGRESS HAS GONE INTO RECESS WITHOUT PASSING A BILL WHICH HAD A STRONG APPEAL TO SPORTSMEN AND NATURE LOVERS THROUGHOUT THE NATION. IN FLORIDA IS A SMALL HERD OF "KEY" DEER, A VERY SMALL VARIETY WHICH IS ALMOST EXTINCT. PRESSURE WAS PUT ON CONGRESS TO CREATE A NATIONAL REFUGE IN FLORIDA TO PRESERVE THE REMAINING KEY DEER. THE BILL FAILED TO PASS.

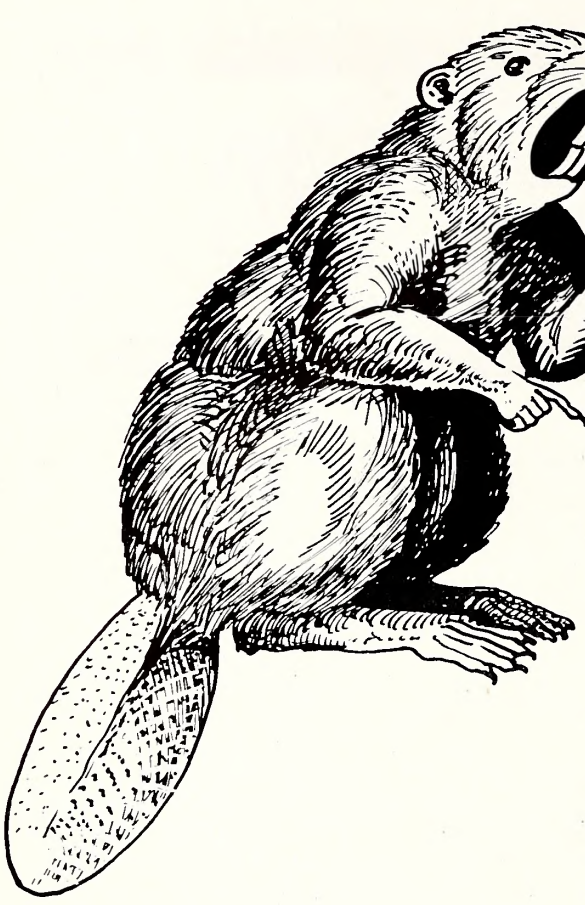
ANOTHER BILL WAS INTRODUCED TO PROTECT THE BALD EAGLE IN ALASKA. ALTHOUGH THE BALD EAGLE IS THE NATIONAL EMBLEM OF THE UNITED STATES, IT DOES NOT GET LEGAL PROTECTION IN ALASKA. THIS BILL, TOO, FAILED TO PASS.

REPORTS FROM FISH AND GAME PROTECTORS AND FROM SPORTSMEN THROUGHOUT MOST OF THE STATE INDICATE A BUMPER CROP OF QUAIL THIS YEAR. COVEYS ARE REPORTED TO BE LARGER THAN USUAL. APPARENTLY THE PAST BREEDING SEASON WAS MORE FAVORABLE THAN WAS FIRST INDICATED WHEN HEAVY RAINS FELL DURING THE END OF THE NESTING SEASON.

TIME MAGAZINE REPORTS THAT THE WIDESPREAD CHESTNUT DISEASE DID MORE TO REDUCE WILD TURKEY POPULATIONS IN THE U. S. IN RECENT YEARS THAN ANY OTHER FACTOR. NATIVE WILD CHESTNUT TREES THROUGHOUT THE NATION HAVE BEEN KILLED OFF BY A DISEASE. SINCE CHESTNUTS WERE A VERY VALUABLE ITEM IN THE DIET OF WILD TURKEYS, THE LATTER SUFFERED A SEVERE REDUCTION IN POPULATION. ENCOURAGEMENT MIGHT BE GAINED FROM THE APPEARANCE OF AN IMPORTED SPECIES OF CHESTNUT WHICH MAY PROVE TO BE THE SOURCE OF BOTH WILD TURKEY FOOD AND GOOD LUMBER FOR FURNITURE MANUFACTURE.

FROM NEW ENGLAND COMES THE REPORT THAT HYBRIDS RESULTING FROM THE MATING OF DOGS AND COYOTES ARE INCREASING RAPIDLY. COYOTES ARE NOT NATIVE TO YANKEE TERRITORY, AND WERE PROBABLY BROUGHT IN AND RELEASED BY TOURISTS WHO ACQUIRED THEM IN TRIPS TO THE WESTERN STATES. A MIDWESTERN NEWSPAPER WRITER EXPRESSED A GREAT DEAL OF CONCERN ABOUT THE APPEARANCE OF A BREED OF COYOTES—DOGS WITH THE INTELLIGENCE OF DOGS AND THE CUNNING OF COYOTES. HE FAILED TO REALIZE THAT HYBRIDS ALMOST NEVER REPRODUCE. THE NEW ENGLAND HYBRIDS WILL DISAPPEAR IN A FEW YEARS, AND REOCCUR ONLY WHEN TOURISTS BRING IN MORE PET COYOTES.

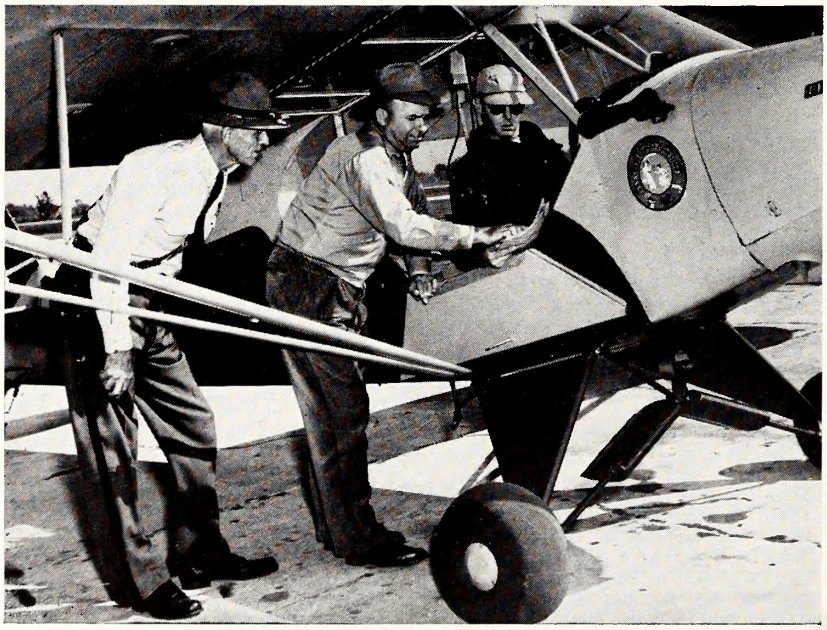
STATE AGENCIES INCLUDING THE WILDLIFE RESOURCES COMMISSION ARE HAVING TO PLAN THEIR PRINTING WEEKS AND MONTHS IN ADVANCE OF NORMAL SCHEDULES. A PAPER SHORTAGE OF SERIOUS PROPORTIONS SEEMS TO BE IN THE OFFING, WITH THE GOVERNMENT TAKING VAST QUANTITIES OF PAPER OUT OF COMMERCIAL USE. TO FURTHER COMPLICATE MATTERS, THIS IS BIENNIAL REPORT YEAR, AND JOB PRINTERS THROUGHOUT THE STATE CAPABLE OF HANDLING BIG ORDERS ARE BECOMING SWAMPED WITH WORK. THE WILDLIFE COMMISSION HOPES TO GET THE 1951 FISHING REGULATIONS PRINTED AND DISTRIBUTED ON TIME DESPITE THESE HANDICAPS.



ANNOUNC... Wild...

The Wildlife Resources Commission de... its of each of these days and calls upon s... en i interest in these three important phas... our note the dates and let the Commissio... esen your programs.

LAW ENFORCEMENT DAY
November 23, 1950



★ Hunting and fishing are sports. All sports have rules. Obey the rules and insist that others obey them. Report violators.

★ Bag limits and seasons ration opportunity and game. See that your interests are protected by halting cheaters and game hogs. Licenses are the contribution we make to "more sport for more people." Let's eliminate the gate crashers!

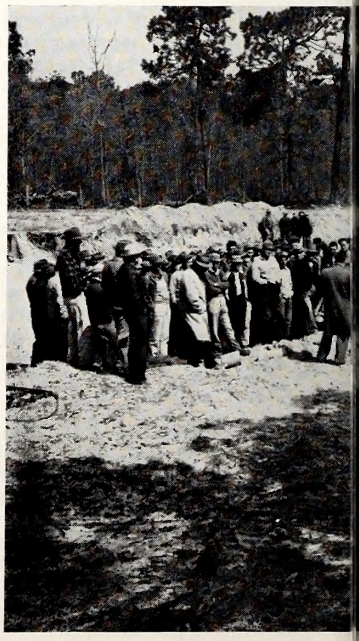
★ All personnel of the Wildlife Resources Commission and Deputy Game Protectors will go into the field on Law Enforcement Day in a united effort to stop violations.

MANA... DA...
Mar... 51

★ Wildlife is a crop. We mus... e can... "seeds" to plant on Managemer...

★ Help a farmer plant food ... wildlif... save den trees. Plant a campaign ... hunti... is your chance to really help w...

★ All personnel of the Wildl... omm... agement Day to these and othe... ildlife...



G

lifeDays

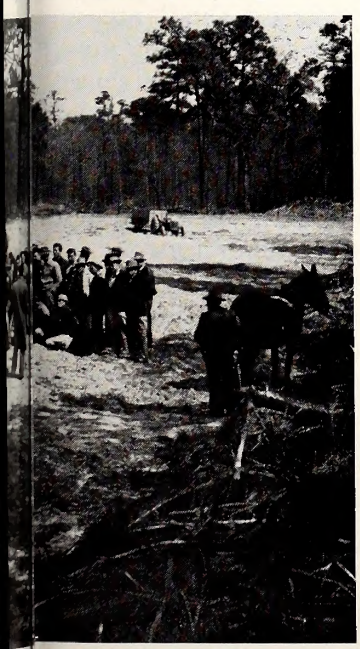
its entire staff to cooperative observance
sen in clubs and as individuals to stimulate
our wildlife conservation program. Please
esentatives in your area help in planning

DAY
51

we can harvest. Here are some

wildlife. Put up den boxes or
f-hunting dogs and cats. Here

Commission will devote Man-
ildlife needs your help!



EDUCATION DAY
September 25, 1951

★ Today's children are tomorrow's sportsmen. Conservation education provides an opportunity to teach the principles of sportsmanship. Encourage wildlife programs.

★ Old and young are naturally interested in the outdoors. Provide them with information and guidance; they will do the rest.

★ Personnel of the Wildlife Resources Commission will dedicate this day to further wildlife education. Won't you help?

Photo By Margaret Fisler

Wildlife IS A CROP

By ROD AMUNDSON

The Harvest

YOU have heard this fellow often. He gets on a street corner, or, if he can, behind the speaker's table at some kind of a meeting, and screams to high Heaven about the way our wildlife is becoming exterminated from the face of the earth. By the time he is through talking (it may take him an hour or two), you feel so discouraged about the woeful condition that you wonder whether it is worth worrying about any more.

But let's take a look at the most pleasant side. Sure, a few species of wild creatures are in grave danger. The whooping crane, for example, is down to 37 individual birds, and a few other species, like the passenger pigeon and the auk, are gone. Wild turkeys were once almost gone, and no one knows for sure whether there are any Carolina parakeets left. Few people are worried much about the latter. Who would want to eat a parrot? But let's look at the brighter side. For instance, North Carolina now has more deer than it did in the days of Sir Walter Raleigh. Early explorers actually had to kill their horses and eat them in areas where deer are now so numerous that more than one farmer has complained about damage to his crops.

Quail More Plentiful

Take quail, for example. There is no question that there are more quail now than there were before the American Revolution, and there is almost no limit to the number of quail this state can produce. Cottontail rabbits are scarce in most places, but they go in population cycles, and there is no reason to believe that they won't become abundant again.

What does all this add up to? Just this. Nearly all of our game species are just as much a crop as the cows and hogs in a pasture, and with anything like the same common sense given to pork production or cattle breeding, we can count on abundant game for generations to come.

Let's use quail again as an example and see what can be done with a game species. Quail are no different from barnyard poultry, in that they must have a suitable place to live. They can be raised like chickens, but tame quail make tame sport at shooting time. You can have quail and eat them too—as long as some are left for seed. A covey of 16 quail can be shot down to only two pairs without any danger of destroying next year's crop.

Wild turkeys became so scarce that most people thought they should be given complete protection with a year around closed season. But you can shoot turkeys and raise turkeys too—as long as only gobblers are killed and enough of them are left to sire the next year's young.

Fish are a classic example of wildlife as a crop. Farm ponds have been built throughout this part of the country in unbelievable numbers. They have produced an abundance of food and fun. One of the greatest dangers to a fish population in a farm pond

is the failure to take enough fish out of the pond. Under harvest, rather than over harvest!

Farmers are true conservationists. They know that their livelihood depends on producing and harvesting crops—and leaving enough seed or breeding stock for the following year. Wildlife management would be a fairly simple matter if only the man on the land had to be reckoned with. It is the hunter, the fisherman — the sportsman — who complicates the picture.

Cattle, hogs, sheep, chickens—all of the produce of a farm belongs to the farmer who produces it. At the same time his land may produce several coveys of quail, a flock of wild turkeys, some rabbits, foxes, even deer and bear. But these wild creatures are not his property in the sense that his livestock is. Here is a Supreme Court decision which clarifies the status of game with regard to ownership (and therefore the right to harvest it) of game:

"The ownership of game is in the people of the state, and the Legislature may withhold or grant to individuals the right to hunt and kill game, or qualify or restrict it, as in its opinion will best serve public welfare. No one has property in animals or fowls denominated 'game' until they are reduced to possession . . ."

It is obvious that if everyone were allowed to hunt or fish where and when he pleased and in any manner he chose, our wildlife resources would soon be completely exhausted. Thus, to make sure that there will be hunting and fishing for future generations, wildlife is put under the protection of law, so that it will be harvested only when and where surpluses occur, and so that everyone will have an equal chance to enjoy the sport.

About 90 per cent of the game produced in the country is produced on agricultural land. Thus, it is the farmer to whom sportsmen are indebted for their annual sport. Out of consideration to the man who tills the soil, and who is thus responsible for the production of most of the game, the law grants the privilege of hunting without license on his own property. He must, of course, abide by the rules of bag limits, seasons, and methods of capture.

The Question Of Ownership

It may seem more than a little unreasonable to tell a farmer that wildlife is a crop that he raises on his farm, then tell him that he does not have the exclusive right to benefit by it through direct ownership. Nonetheless, no species of game respects boundary lines, and a fox or a covey of quail may be on one farm today, and on another tomorrow with no way of proving claim. Waterfowl and doves not only move from farm to farm but across state and even national boundary lines.

Photo By Jack Dermid

Artificial nesting boxes increase squirrel populations.

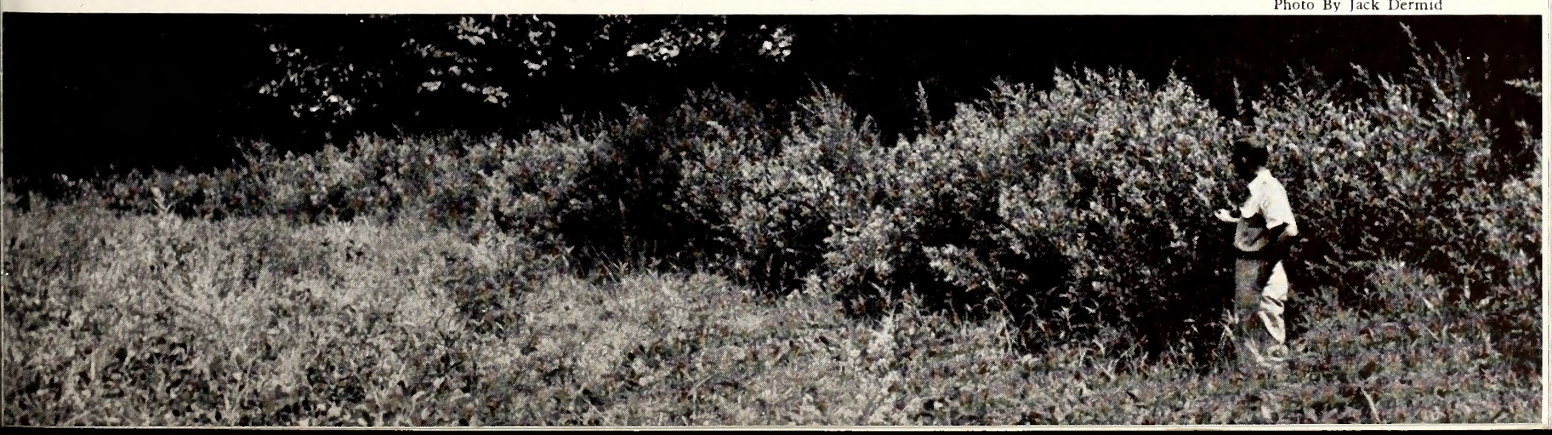
It is the right of every citizen to join in the harvest of wildlife. This fact brings about no end of trouble. Many hunters believe that their hunting license gives them the right to hunt where they please. Nothing could be farther from the truth. Although the game on a man's land may not be his exclusive property, the land is his. It is his constitutional right to defend his property against trespass. He alone can say who shall go on his land and who shall not.

Sportsmen often take the attitude that farmers ought to produce more game by planting wildlife food and cover, without ever stopping to realize that farmers get little if any thanks. Few farmers can be induced to produce more game on their land

(Continued on page 20)

A one-year-old stand of bicolor lespedeza. With a little cultivation, such planting produce quail the first year.

Photo By Jack Dermid



Charlotte's Successful Experiment

THE CHILDREN'S NATURE MUSEUM

By RALPH MULFORD

NOTHING much distinguishes the small, white frame dwelling on Charlotte's Cecil Street, except the sign over the entrance and the stuffed deer that stands just inside the door — and, of course, the fact that it is sort of a Mountain that came to Mohammed.

Members of the Natural Science Club, a senior high school group, inspect an owl.

The sign reads "The Charlotte Children's Nature Museum," and it was established three years ago so that city kids, deprived of a close companionship with the things of nature by houses choked too close together and the restraint of asphalt streets and cement sidewalks, might enjoy a first-hand view of wildlife and be given an opportunity to study natural history and science in a place of their own.

And the project has been a tremendous success from the beginning.

"Even while we were preparing the museum for its opening," said Miss Laura Owens, who, since the beginning, has taken an active part in the museum and is now director, "we couldn't keep the children away. As they walked past the front, the stuffed deer at the entrance excited their interest, and they came like bees to honey. And they told their friends, and they came, too. From the time the sign was hung over the museum's door, the success of the project was assured."

Proof of the eager acceptance of the museum by the kids themselves is in the new $50,000 building which is to be constructed in Freedom Park. Construction is being underwritten by the Charlotte Junior League, a group that has offered its full support, both morally and financially, since the first conception of the museum idea.

In its three years, the museum program has expanded constantly. No longer is it completely for children, but adults may join as well. For the grown-ups, a series of Audubon Screen Tours, with films and lectures concerning all phases of nature and conservation, is brought to Charlotte each year. Also, family movies are a week-end feature where educational movies of interest to all ages are shown.

But day-time activities are designed specifically for the kids. All types of classes—nature study, shell craft, clay modeling, metal work, seed crafts—are always in progress. Nature clubs are open to each age group in which special studies of natural science and wildlife offers a terminal for the common interests of outstanding nature students. To join a club, a member must amass at least 100 museum points by acting as a guide, attending classes, and/or helping with museum chores. New members are introduced to the museum by guides of their own age who have taken courses to fit them for explaining museum exhibits and procedures.

As the guide escorts the new youngster around, unique devices are located at various points which are designed to keep his interest at a constant high-pitch. There is the electric questioner, a device which depicts in pictures the variety of birds in America. The names of all birds are "scrambled" on a panel beneath the pictures. Under each picture and each name is a metal stem, and an electric circuit is completed when extension poles of flashlight batteries concealed within the questioner are applied to stems which match the correct name and bird. A red light flashes on to indicate a right answer.

Other gimmicks to stimulate interest include the "What Is It?" corner. This is a series of shelves on which are a number of oddities, such as sea urchins, insect galls, cocoons, and sea buscuits. Beneath each

object is a flap which, when lifted, reveals its identity and information pertaining to it. In addition, a reference list is given which an interested party might consult to satisfy his curiosity about the item. This trick leads many of the kids to the museum library which contains a varied selection of volumes for all reading ages to use in supplementing their nature work.

The habitual question of veteran members when they return to the museum from day-to-day, says Miss Owens, is "What's new?"

And it's a question seldom difficult to answer. Someone has given the museum a new animal or there's a new exhibit or a new class is about to start. Then there's the day when the moth, almost forgotten in her cocoon all winter long, decides to make her debut. Museum activities stop, and the kids cluster around to see. There's an occassional gasp of wonder, but for the most part, all is silence and fascination as the creature breaks into view, begins pumping juices from its body to expand its gaily-patterned wings, and eventually flutters in full beauty before the mystified faces of its young audience.

Credit for the variety of displays goes to Miss Barbara Neill, who came to the museum recently as staff assistant. One of her first displays after arriving at the museum was of an under-the-sea setting. She suspended a stuffed sea turtle, in diving position, against a background of blue, with various coral formations beneath it. A little girl, seeing the display for the first time, remembered the lack of realism in the turtle as she had seen it last, exclaimed, "Oh, look, you've made *it* a better museum!"

Rooms for classes will be provided when the new building is completed, but most classes are now held in the main exhibit room. Aquariums line the walls of this room, a few garter snakes are displayed in jars, and stuffed animals in various poses adorn a number of shelves. Live animals are caged in the basement and also in an outdoor area. Club rooms are in the basement, and mounted wild fowl form a realistic circle around the bird study club room.

At present, a few activities must be conducted away from the museum. Each Saturday, field trips made in Freedom Park, animals and insects are viewed in their natural habitat, and plant life is studied and explained. Occassional tours are made of the bird sanctuary developed over a period of years by Mr. and Mrs. Edwin Clarkson at their home.

The city has allotted enough property in Freedom Park, along with the museum site, so that all activities can be conducted directly from the new museum. Plans include a large arboretum, surrounding the building, where all outdoor activities may be conveniently conducted.

From the beginning, the majority of people and groups in Charlotte recognized the potential values of a center for children's nature study. Even before any concrete plans had been made, the idea was presented to and endorsed by the Boy and Girl Scouts, the P.-T.A., the school system, and other local groups.

But definite plans were not agreed upon until September of 1946 when John Ripley Forbes, a representative of the William T. Hornaday Memorial Foundation, met at the home of Arthur Jones, then a representative of the National Recreation Association, with representatives of city and civic groups to begin laying solid foundations for the project.

At the meeting, Mr. Forbes outlined a museum program; and Charlie Stone, then chairman of the City Parks and Recreations Commission, offered the use of the municipally owned property and building on Cecil Street. Mrs. A. L. Roberts, Mrs. Lex Marsh, and Mrs. Willis I. Henderson, all of the Charlotte Junior League, pledged the support of their group to back museum operations. C. W. Gilchrist, representing the Rotary Club, was elected president of the museum board of directors, and things were underway.

Mr. Gilchrist remained president of the board until June of this year when Mr. Jones was elected to the office. One of the museum's organizers, Miss Owens, has been director since September of 1948.

During the winter seasons, since the museum has been in operation, an average of one tour a day has been made of the museum by grade school classes (during school hours), Boy and Girl Scout troops, or other such groups which deal with children in established bodies. The Boy Scouts even arranged for a special bird study class which, if passed in accordance with museum requirements, entitled a Scout to the bird study merit badge.

This youngster with a guinea pig and its two babies is a typical museum member.

Miss Barbara Neill, museum staff member, and a young member crate an opossum to be shipped to the Brooklyn Children's Museum.

Museum membership now totals about 2,700 children, and 350 adults. Original purpose of the museum was to offer city kids an accessible opportunity to study nature, but now that the purpose has been accomplished, future plans are to push the idea into the county.

To make certain that all city youngsters knew of the museum, Miss Owens toured the schools with a program which included movies of the museum, exhibits, and a brief talk. She hopes to carry a similar program to the county schools.

In connection with this move, a six-week program was given at the museum in September which followed the harvest season and depicted, with movies and displays, methods and life on a farm. Program centered around tobacco, corn, cotton, and apples, respectively, at the specific time that each of these goods was in its harvest season.

Children's museums are a fairly new addition to the American scene, and not until recent years have they been organized in large numbers over the country. Oldest, organized in 1899, is the Brooklyn Children's Museum; and the Boston Children's Museum, the second oldest, has been in operation only 30 years.

The New Charlotte museum will contain all the latest innovations, and Dr. Lawrence V. Coleman, executive director of the American Association of Museums in New York, has asked that he be supplied with the architect's sketches in order that they may be included in the book he is now writing on museum architecture.

More than once, the museum has drawn warm praise from prominent figures in the field of natural history, and several of them have paid personal visits to Charlotte. Among them was Dr. Charles Russell, executive director of education for the American Museum of Natural History in New York, who recently completed a nation-wide tour of children's museums in preparation for a report he has been requested to make at a meeting of UNESCO in London soon.

UNESCO's interest in children's museums stems from the hope that similar-type institutions might be encouraged in Europe and other parts of the world. Through an exchange of museum specimens, interests, and ideas from nation to nation, the global circle of museums would accomplish much in understanding between children of all nationalities.

While in Charlotte, Dr. Russell was quite impressed by the fact that the local museum dealt exclusively with nature and studies pertaining to nature. He described it as the most "unique" encountered on his trip.

Another outstanding naturalist, internationally known author, lecturer, and specialist on problems of conservation, William Vogt, said in a letter to The Charlotte News, following his visit, that "so few cities in the United States possess institutions of this kind that Charlotte is to be congratulated for its initiative."

The success of the museum, however, is best expressed by the members themselves—not by words, but better still, by their natural feelings as they participate in museum activities, by the communal spirit of several ten-year olds nursing a baby cardinal, by the fascination and awe in the eyes of a new member as he feels a garter snake glide through his fingers for the first time. There is no dissension, no bickering, only a kindred fellowship which grows out of a bond of understanding that the museum creates within them of the fundamental things of nature around us—things, it might be added, that many of their elders might do well to take fresh note of.

Listen to

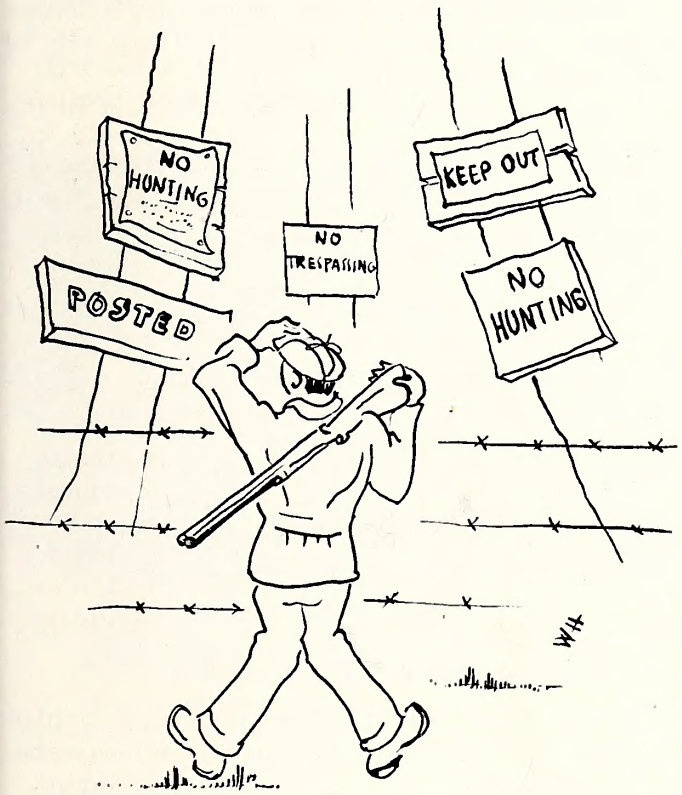
"The Tar Heel Wildlife Review"

Now Heard On Twenty-One North Carolina Radio Stations. Check your Local Paper For Time And Place.

SOME PEOPLE NEVER LEARN

An Editorial

Illustrations By Will Hon



"Well, I'll be a sorry son of a seasick sapsucker! Posted! No Hunting! No Trespassing! Keep Out!" A tired, sweaty Tar Heel leaned his shotgun against a fencepost and sat dejectedly down on a rock. He lit a cigarette and blew defiant puffs of smoke toward a new, freshly-printed poster with the words "No Hunting" calling out to the countryside.

This hunter was not a great deal different from a hundred thousand or so others. He was getting on toward middle age. He had a wife and two kids, a car, paid for, and a house and lot nearly paid for. He worked five and a half days a week and had time on Saturday afternoon and holidays to do a little hunting. He lived near good bird territory, fed a dog the year around for a few hours gunning, and he looked forward to opening day several months in advance.

There he sat, dejected. He had been hunting this farm ever since he was a kid and had kicked up many a covey along the fields and out of the brush patches. Now that "No Hunting" sign grinned at him. "Getting so the whole dadblamed state is covered with 'No Hunting' signs. Where in heck is a man going to hunt?"

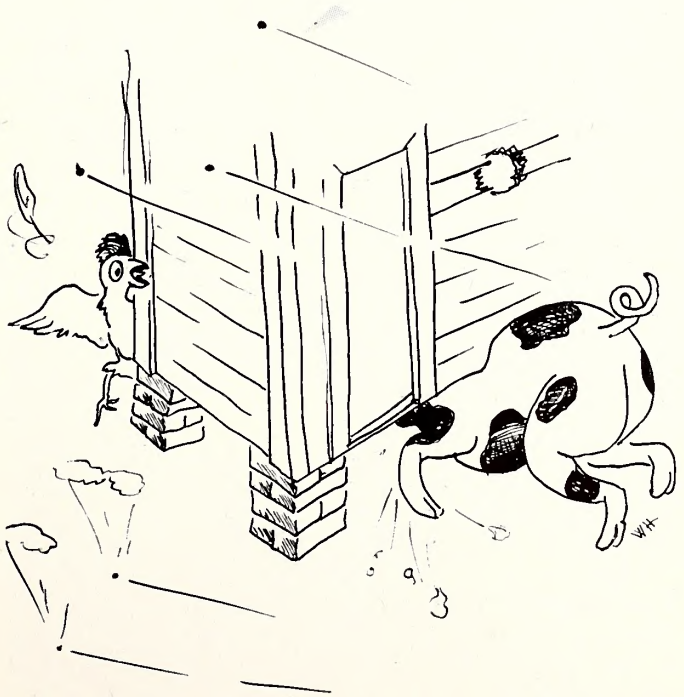
No, this man was not a lot different from others; he was finding good hunting territory harder and harder to get into. Farmers were closing out their land to hunters.

It was a warm afternoon, the kind that has a little fall tang in it, but warm enough to make a man want to stay put once he got in a comfortable position. And maybe dream a little, too, although a crow in an oak tree over across a bean field kept hollering away at a dog or something.

"Used to have a lot of fun hunting around here. There was the time a bunch of us went into old Windy Miller's place when he wasn't home and shot up a couple of coveys and then sneaked away with a country ham out of his smokehouse. And the time we left the gate open on Jim Critch's cow-pasture and Jim's cows got into the peanut patch and ate themselves sick and Jim had to get the vet out from town to work on them.

"And Andy Buck was bragging the other day about the way he and two other fellows got up the biggest covey they ever saw over by White's Crossroads and killed every last one of them. Pretty good shooting, but maybe the guy that watched that covey all summer wasn't too happy about losing all of his birds.

(Continued on page 23)



INCREASING TROUT PRODUCTION

By MAURICE BRYANT, JR.
Supervisor Of Trout Hatcheries

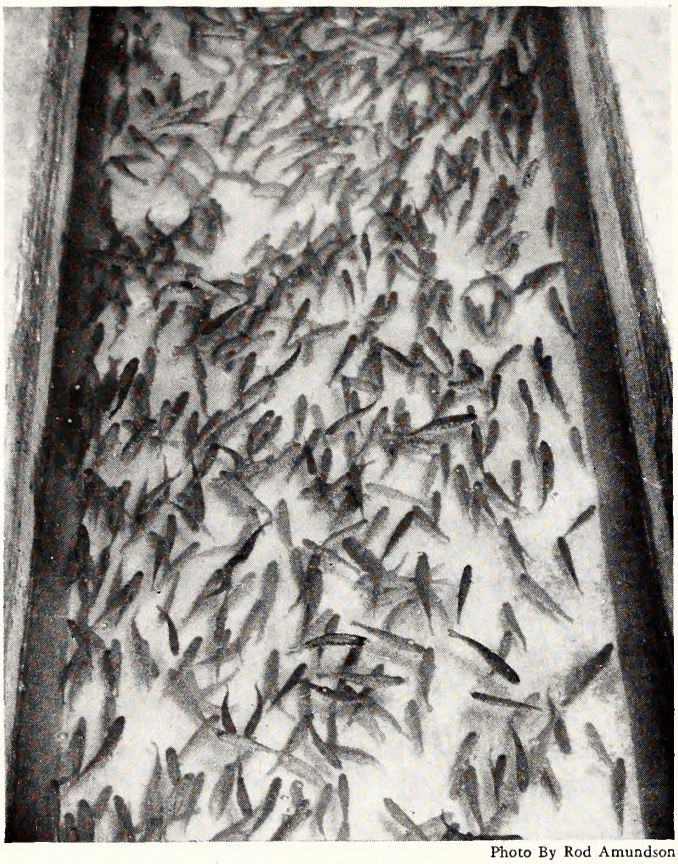


Photo By Rod Amundson

New type rearing troughs have double the fish holding capacity of older types, yet require the same amount of floor space.

ANOTHER forward step in trout production is believed to be in the process of development at the State Fish Hatchery at Marion. This past spring, six cement tanks of an entirely new type were constructed on a trial basis at the suggestion of the supervisor of trout hatcheries. During the several months in which these tanks have been in use, they have proven very satisfactory, and it is planned to build eighteen more this year.

These tanks are remarkable in that they take up the same amount of floor space in the hatchery building as standard hatching or rearing troughs, and yet the fish holding capacity is double that of the troughs.

Not only is the rearing capacity of the building increased, but the hatching capacity is not altered. The tanks are constructed on two levels as are the hatching troughs. Thus it is possible during the hatching period to set the troughs on top of the tanks in their usual position, use the same drains, and operate them as effectively as before. Later, after the fish have been hatched from the eggs and broken to feeding, the troughs may be removed to storage, the fish transferred to the tanks, and the benefits of the added space utilized. This will allow the hatchery to hold its fish indoors for a longer period of time than previously, and they can be more carefully controlled.

It has further been noted that fish held in the tanks under the same conditions of water flow, degree of concentration of fish per cubic foot of water, and fed at the same food levels as fish held in troughs, have shown a greatly increased growth rate.

Considerable labor also is saved due to the fact that the tanks have to be cleaned only every other day or every third day. Ordinary troughs must be cleaned at least once each day depending on fish size and other conditions.

All in all, considering the added rearing capacity, increased growth rate, saving in labor, and the added control factor, the hatchery men believe that this is indeed a move in the right direction.

(Continued from page 15)

when the most they can expect from it is a little shooting for themselves and plenty of headaches from trespassers.

Occasionally, conservation-minded sportsmen do come out to the farm in the spring and help to sow food patches and plant lespedeza and other wildlife cover. Such men are the exception rather than the rule, and certainly more of them are needed.

It has been estimated that people in North Carolina alone spend between 75 and 100 million dollars each year because they like to hunt and fish. This means just that much money added to the total wealth of the State and to the welfare of the people. It means that the total buying power of North Carolinians has been increased by that amount. Buying power helps keep prices up on cotton, corn, tobacco, wheat, and livestock.

Yes, wildlife is a crop. But it is a crop that belongs to all of the people, even though the job of producing it falls mostly to the farmer. It becomes more and more obvious that those who share in the harvest should give a helping hand to the farmer who produces it.

A fish hatchery in Nebraska has developed a race of golden bullheads which are a color mutant somewhat similar to albinos.

VANCE COUNTY WILDLIFE CLUB

The Vance County Wildlife Club has stacked up an imposing list of accomplishments during the past year, and plans to go forward again this year. The club meets regularly on the second Thursday of each month, and you can bet that the meetings are well attended. It takes activities to keep a club alive and the Vance County club is keeping very much alive.

Here are the activities which helped to put Vance County on the wildlife club map:

(1) Purchased 100 pairs of quail for restocking purposes each year for 1948, 1949 and 1950.

Live and mounted game animals were combined with habitat vegetation for an effective fair exhibit.

(2) Put on Wildlife Exhibit at the Vance County Fair in 1949 and plans same again this year.

(3) Sponsored cover strips and distributed bicolor lespedeza in cooperation with the U. S. Soil Conservation Department.

(4) Advertised $50.00 reward for conviction of game law violations.

(5) Sponsored and paid for expenses of two boys to 4-H Wildlife camp.

(6) Held one shooting exhibition and one casting and flyrod exhibition, both open to the public.

(7) Held turkey shoot in November 1949 and plan to hold several this fall.

(8) Officers have held several meetings with the Directors of the Department of Conservation and Development and with Wildlife Resources Commission in regard to establishing a conservation and recreation area on Buggs Island lake.

(9) Assisted in securing competent game protector for the county.

A single lead shotgun pellet taken into the gizzard of a wild duck is sufficient to kill the bird by lead poisoning.

A good coon dog not only "sounds off" at the coon tree, but tries to climb the tree to get the coon.

CHOWAN COUNTY COON DOG TRIALS

At the Chowan County trials, held on Labor Day, a drawing was held to determine the winner of a .22 rifle.

Senior group winners were: 1st Line, Trayler, owned by Gable and Steverson, Norfolk, Va.; 1st Tree, Buck Meyers' Bendard. Junior group winners were: 1st Line, V. S. Smith's Pistol Pete; 1st Tree, King and Griffeth's Rattler.

The Chowan County Coon Hunters Club's Labor Day trials were held at Dillards Mill Pond north of Edenton, and over 500 spectators gathered to watch. Virginia coon hunters brought in their dogs and walked away with most of the prizes. The trials were recorded for a state-wide radio program "The Tar Heel Wildlife Review."

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

The words of the old hymn, "When The Roll Is Called Up Yonder," come to mind as the month of November, 1950, comes around. Of all the rolls that may be called this month, there is one that gets little publicity—the violation list compiled by the Enforcement Division of the Wildlife Resources Commission.

Many names will appear on the list this month—new names and the names of many folks we know. The list is growing as well as the demand for more money to supplement the enforcement work. This year the cost to you was approximately one-half million dollars!

What is happening to us and to our sport? Are we thinking only of ourselves— the meat we can get now? Is the meat angle so important that all standards of law-abiding citizenship and sportsmanship are to be willingly and knowingly abandoned?

Once, when it was demanded that she produce her jewels, a Roman empress brought forth her children and announced "These are my jewels." The same is just as true today—our children are the embodiment of our hopes for the future. We try to see in them the good points and none of *our* faults. Yes, above all, we want them to be good sports in the game of life. In return, we hope they will be proud of us, their parents. The time to generate this pride is now—November, 1950, for only as we become proud of ourselves as people who can be depended upon in the field, can we merit the reflected pride of those who come after us.

Let's keep our name off the roll of violators.

W.D.

From Mr. John R. Arnold, Supply, N. C., the following:

"This is a question my fellow sportsmen and I have been arguing for sometime. 'Does the garpike make its complete diet of pan fish?'

"I enjoy taking WILDLIFE IN NORTH CAROLINA very much and think it a worthwhile magazine."

The long nose gar which is so common in the inland waters, of the southeastern states is extremely destructive of all species of fish. Most writers describing this species infer that it eats anything it can catch.

Mr. J. A. B. of Candor, N. C., asks, "How far can I see with a pair of 7 x 50 binoculars . . ."

The answer to that one is, you can see as far with the glasses as you can with the naked eye. The point is, the glasses help the eye to see better. If you can just barely distinguish an object at a distance with the naked eye, the use of seven power glasses would enable you to see the same object seven times as far away, or enable you to distinguish it to the same degree possible if you were only one-seventh of the distance away from it.

Mr. E. M. H. of Elkin, N. C., asks, "Where do you recommend that I try to arrange a duck and goose hunt, and what are the average costs per day of such a hunt in North Carolina? I have just come to the state and am addressing this letter to you hoping that you will give me the benefit of the best information available."

The answer to this one is easy. I believe that the goose hunting at Lake Mattamuskett will please you. The rates are reasonable, the blinds adequate and the accommodations are comfortable. Write or call Mr. L. B. Tunnell, New Holland, N. C., phone Swanquarter 162. For hunting on the sounds along the coast, I suggest that you write the Wildlife Protector in the county in which you desire to hunt and ask for his recommendations.

Unbeatable?

"I have some information I believe will be of interest to other coon hunters of the state.

"I am enclosing a snapshot of a pair of coon hounds that have treed and have taken 400 raccoons in the past four years. Daisy, on the right, is five years old. Lucy, left, is six years old.

"As I believe this is a record, I would like to hear from other hunters.

Yours truly,
(S)Dewey Bennett
Box 35
Stonewall, North Carolina

Dewey Bennett with his record making coon dogs. Daisy and Lucy have taken 400 raccoons in the past four years. Are there any other coon dogs in the state that can surpass their mark? Let's hear about your dogs.

Book Review

ADVANCED BAIT CASTING, by Charles K. Fox. 204 pages with black and white plates by Fred Everette. Published by G. P. Putnam's Sons, 2 West 45th Street, New York. Price $3.75.

This book is a summary of many case histories of large and smallmouth bass which fell for a new line. The line in this case being handled by Mr. Fox, who is an ardent student of the art of casting the new extremely small lures on just as light rods, lines and free-stripping reels.

The author's experiences have given him a store of knowledge gained from personal study and experimentation; hence he speaks of night fishing, fall fishing and the details of equipment and practices with assurance. There is no question in the reader's mind but that many new lines of thought concerning the habits and peculiarities of these game fish have been carefully studied and set down in the book.

While two of the later chapters are entitled "Reflections" and "Recollections," the entire book is colored with reflections and recollections of experiences which make the whole book most interesting, informative and satisfactory reading.—W.D.

(Continued from page 7)

large, deep lake, such as a power reservoir, and remain there for a number of years before going back up to spawn. Unlike salmon, the rainbow returns to the large body of water again and in time grow to surprising proportions.

Rainbows over 12 pounds in weight have been taken from Tar Heel reservoirs, and there is no reason to think that larger ones will not be taken as time goes on. Large rainbows find an abundance of forage fish in a reservoir, and thus may grow to formidable size.

Angling

As indicated by the discussion of the size rainbows may reach, angling for them is a popular sport requiring considerable skill. A fair-size rainbow in white water can test the mettle of both angler and his tackle. In a lake, a six-pounder can worry a fisherman into a cold sweat, and as often as not escape to provide a battle to another angler. Rainbows will take both live bait and artificial lures.

They may rise to a dry fly, seize a wet fly, or grab at a spoon or a plug or a dangled minnow. Once hooked, rainbows are tireless fighters. In lakes they will get up and "walk on their tails" in the manner of bass.

Management

As is true of other trout, rainbows must be hatchery-reared to provide enough sport for the ever-increasing demands of fishermen. They are not especially difficult to raise, and grow rapidly to a size where they may be stocked for the creel.

Natural habitat for rainbows and their two North Carolina cousins can be increased only by a long-range program of stream improvement, generally improved forest management and the reduction of pollution in their streams. Hatchery-reared trout are expensive to produce, but the demands of fishermen must be met though artificially.

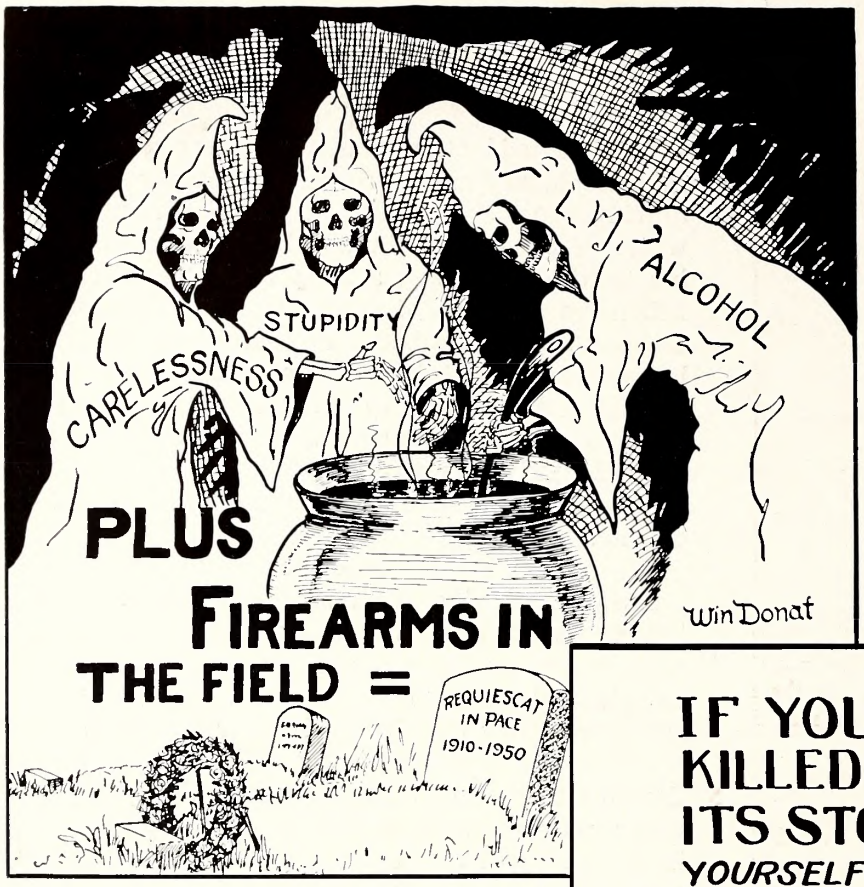
(Continued from page 19)

"Come to think of it, old man Emmerson got pretty mad the day we shot doves in his bean field and shot drove him and the old lady out of the cotton patch. Old Emmerson sure was mad. Never forget the way he ran to the house for his rifle and we laughed at him and drove away with him threatening to shoot.

"We used to get a lot of late watermelons over at Welty's place during the dove season. Wonder if Old Jeb Welty ever collected for the chickens we told him the potato diggers stole? Guess he wouldn't have gotten so mad if that old rooster hadn't been first prize winner at the county fair.

"Never forget the time we woke Bill Kellum's old mule up with a load of birdshot. That mule sure took off down the road. Bill like to never got him stopped again till he was plumb wore out. That mule sure could run. We nearly died laughing at old Bill up there on the cart with his hair flying in the wind trying to stop that mule. Bill might have got hurt, but it sure was funny to see him fly into the cornfield when that mule took a turn around the corner of the road.

"Yeah—those were the days. Plenty of birds and rabbits to shoot, and folks sure didn't seem to mind about other folks going on their place to hunt like they do now . . . guess I'll take a little nap . . ."



THE SCHOOL OF EXPERIENCE

Experience keeps a dear school, but fools will learn in no other, and scarcely in that; for it is true, we may give advice, but we cannot give conduct. Remember this: they that will not be counseled cannot be helped. If you do not hear reason, she will rap you over your knuckles.

—Benjamin Franklin

THE CONSERVATION BATTLE

The conservation battle cannot be a short, sharp engagement, but must be grim, tenacious warfare—the sort that makes single gains until renewed strength and a good opportunity make another advance possible.

—Ira N. Gabrielson

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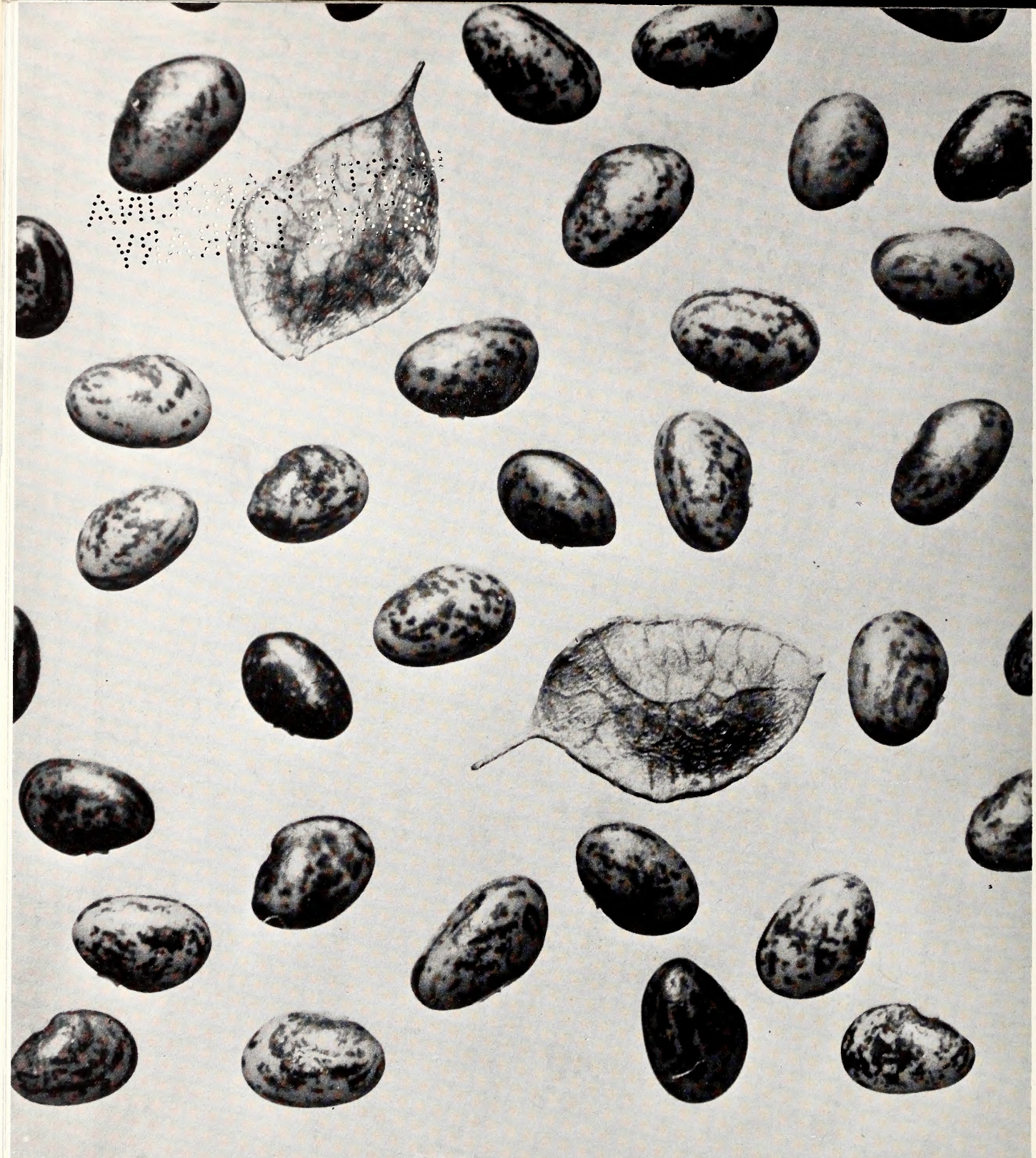


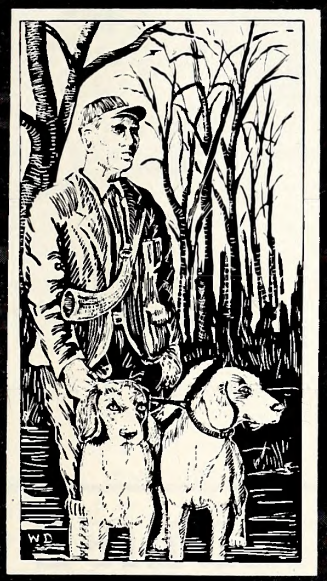
Photo by Jack Dermid

ATTENTION QUAIL HUNTERS: Look closely at these seeds of bicolor lespedeza. They are greatly enlarged to show detail, each unit of the scale representing 1/16 inch. REMEMBER THEM! When you bag your birds this season, look for bicolor seeds in their crops. The chances are that you will find some if a bicolor field border is on your hunting grounds, for bicolor seeds are tops as food for quail. Place orders **NOW** for current delivery of bicolor seedlings.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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December, 1950 Vol. XIV, No. 12

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
JACK DERMID, Photography
MARTY MABRY, Circulation

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COVER

Win Donat used oils to depict one of the most beautiful of all waterfowl, the wood duck. It is Wildlife's Christmas card to you, complete with holly and snow.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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Photo by Pennsylvania Game Commission

Bobcats can give a splendid account of themselves when forced to fight, and a dog that can lick his weight in wildcats is a marvelous dog, indeed.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-third of a Series on The Wildlife Species of North Carolina

THE BOBCAT

By ROD AMUNDSON

History

SOMEONE has said that the best way to get a bobcat is to count his teeth. This advice, obviously, assumes that the animal has already been subdued. You don't examine a bobcat's dentition unless the animal is very thoroughly dead.

Bobcats, or wildcats, have established themselves in the language and folklore of English speaking people as almost no other carnivore. The ferocity of their appearance, and their ability to render a complete incarnation of fury have captured the imagination of story tellers for years. Bobcats have been a standard prop for the Katzenjammer Kids on the comic pages for some thirty years, and the diaries of early American explorers are colored with tales of the fierceness of these over-grown tabbys.

Like many other animals, bobcats have been benefited by the advance of civilization. They are creatures of the thicket-open woods country, and the establishment of small farms in the midst of the wilderness has served to increase their number. This fact, of course, is by no means good news to the long-suffering farmer.

Bobcats are closely related to the Canada Lynx. The latter is a larger animal, restricted to more northern climates, whereas the bobcat prefers the warmer climate of the more southern temperate zone. They range across the country at least as far north as the Canadian border, and extend into Florida and Old Mexico. Altogether there are about ten distinct species and subspecies plus several local races.

In North Carolina bobcats are found mostly in the mountain counties and in the swamplands of the coastal plains. Occasionally they are found in localities between.

Characteristics

The bobcat may be described as an out-size housecat with a stubby tail and tufted ears. The general color is a brownish tan with dark spots which may

take the pattern of stripes or lines on the face and foreparts. There is a great deal of variation in markings among individuals, yet the over-all coloration and marking is similar.

The hair on the cheeks and chin is somewhat tufted, giving the head a massive appearance and adding to the appearance of ferocity when the animal is snarling. The ears are relatively large and each has a tuft of tip hairs which further serve to give the animal a formidable appearance.

In size, bobcats average about 20 to 25 pounds, although specimens much larger than this have been taken in North Carolina. In the Maritime Provinces of Canada specimens weighing 50 pounds have been recorded.

People may spend their entire lives in bobcat territory without ever seeing one. They are nocturnal animals, and may rarely be seen during the hours of early morning, and more rarely still abroad during the day. Despite their well-deserved reputation for ferocity, bobcats are shy, retiring creatures where man is concerned, and thus field observations of their daily routines are limited. They are probably the only animal in this state which will challenge the rage of wild boar to make off with a suckling pig.

Many are the tales of the caterwaulering of bobcats out in the woods. During the mating season, bobcats are as vociferous as barnyard cats, and they have the advantage of greater chest capacity and more cavernous nasal sinus chambers to amplify the sound. When two get together during the tomcatting season, the woodlands will resound with their howls and yowls and blood-curdling snarls. They have been observed to sit for full minutes and glare at each other with laid-back ears and yowl and yammer as only cats can do.

When pleased or content, they purr like milk-fed tabbies, and from time to time they "meow" just like a purebred Maltese.

Although actually shy in demeanor, and retiring in habit, bobcats can give a splendid account of themselves when forced to fight. There are undoubtedly dogs which, through years of experience and continued good fortune, can subdue a full grown bobcat, but in such cases it is most likely that the dog has a distinct advantage in size and weight; a dog that can lick his weight in wildcats is a marvelous dog, indeed.

Life History

When it comes to parenthood, bobcats show most clearly their close relationship to their domesticated cousins. (Is a cat ever completely domesticated?) In North Carolina the mating season occurs in January or February, and it is during this time that bobcats establish their reputation for caterwaulering. Males competing for the favor of a female may engage in furious battles complete with ear-splitting sound effects, or an established pair may sit on a rocky crag by moonlight and give forth the most growls and yowls and howls. The courting serenades of bobcats have often been attributed to mountain lions, probably due to the volume of the sound.

There have been very few observations to establish whether the male bobcat has anything further to do with the rearing of the family other than begetting the kittens. Male bobcats have been observed near the mother and kittens, but until someone observes an old tom bringing food in to the young family, his true relationship to the offspring will remain obscure.

The nest of bobcats may be in a variety of places, depending on terrain and local physical features. It may be located high up in a hollow tree, in a cave or sheltered crevice, or in a hollow log on the ground. In every case it will be found to be lined with soft leaves, moss, or other comfortable bedding.

The young are born about 70 days after conception, and are usually three in number. After the manner of all kittens, they are born blind and quite helpless. The eyes open several days after birth, and the fiery little balls of fur are weaned from their mother's milk to a diet of flesh before many weeks have elapsed.

Few bobcats have been born in captivity; those born in confinement have received all of the loving care from their mothers that ordinary kittens get. As soon as the youngsters are old enough to eat flesh, their mother brings in choice items such as rabbits and mice from nocturnal hunts. Later they go afield with their mother and soon learn the feline skill at hunting.

In the June 15, 1907 issue of *Forest and Stream* appears an article by one "Blennerhasset" of Parkersburg, West Virginia:

"While I was looking at the tree and admiring its beautiful proportions, a full grown Wild-cat with 2 kittens so small that they were barely able to keep up with the mother Cat emerged from a clump of underbrush a few yards below.

"Nice kitty!" Some bobcats can be tamed as pets. Others remain completely anti-social.

Photo by Pennsylvania Game Commission

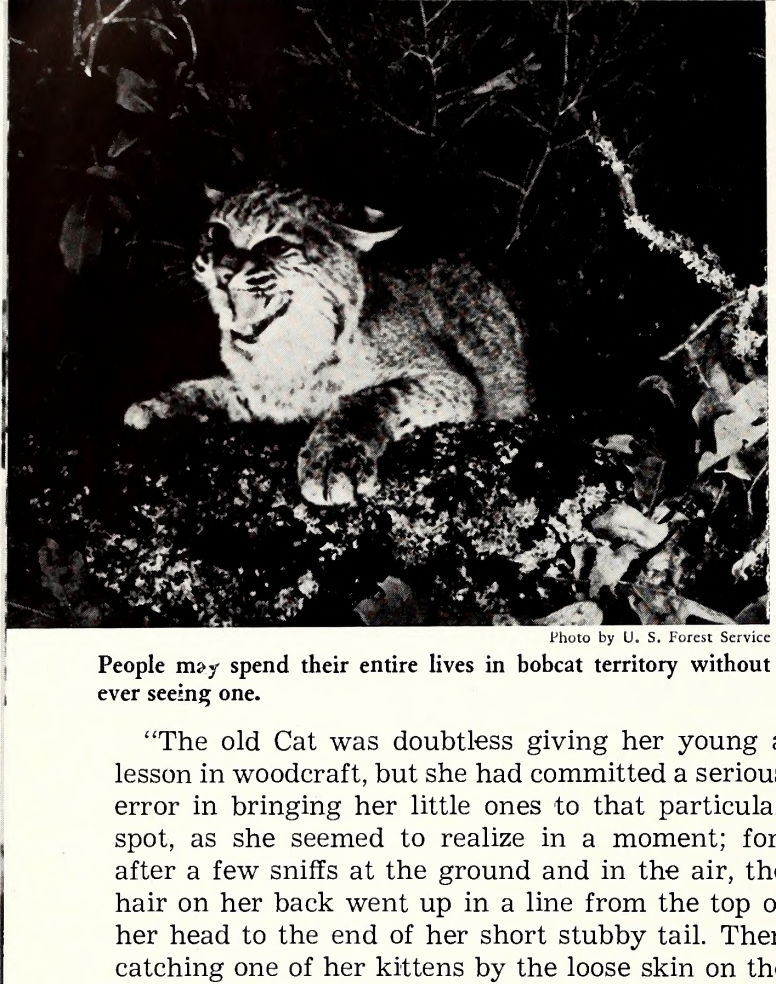


Photo by U. S. Forest Service

People may spend their entire lives in bobcat territory without ever seeing one.

"The old Cat was doubtless giving her young a lesson in woodcraft, but she had committed a serious error in bringing her little ones to that particular spot, as she seemed to realize in a moment; for, after a few sniffs at the ground and in the air, the hair on her back went up in a line from the top of her head to the end of her short stubby tail. Then catching one of her kittens by the loose skin on the back of its neck, she sprang up the chestnut tree as quick as thought, and deposited the kitten upon a limb close up to the bole of the tree.

"Leaving the startled kitten there, she quickly scrambled back to the ground, and caught up the other young one just as an enormous old half-wild Razorback Boar, with tusks at least 5 inches long, dashed out of the brush not a dozen feet away, closely followed by a wild Sow with a litter of Pigs about the size of Rabbits. The Cat barely made her escape, for before she had ascended the tree 10 feet, the old Boar was stamping and grunting in baffled rage at its foot.

"After depositing her kitten in the crotch of a limb, the Cat descended to one of the lower branches, overhanging the ground, but out of reach of the wild Boar, who was tearing around the tree, foaming at the jaws, and snapping his great teeth with rage. Neither of the animals saw me as I peered through the brush of laurel above them, and as I was on the leeward side, they could not scent me at that distance, and I sat there forgetful even of the big trout I had climbed the mountain to catch, and looked on, wondering what the old Cat was up to, for that she had some particular object in view when she took up her position so close to the ground, I was satisfied. That she intended springing upon the wild Boar and fighting it out then and there, I could not for a moment believe, for I knew—and she must have known even better than I—that she was no match for an animal that a full-grown Bear would have hesitated to tackle.

"But the old Wild-cat had no intention of testing the fighting qualities of the Boar, though she kept a close watch upon his movements. Meanwhile the Sow and her Pigs seemed to become satisfied that as long as they had the protection of the Boar they were entirely safe, and in a little while they began to feed upon the chestnuts, which literally covered the ground beneath the tree. Closer and closer some of the young Pigs approached to the ground beneath the limb upon which the Cat crouched, until at last one of the Pigs, while rooting around among the leaves, worked its way to a spot a little to the right and almost beneath the crouching Cat. I caught a slight movement of the latter as she crouched lower and lower, and a second later she sprang out and landed upon the unfortunate Pig. Then an agonized little squeal from the Pig, and the Cat was bounding away with the wild Boar in pursuit, the Cat carrying the victim in her mouth, much as a pointer Dog carries a fallen game bird, bounding along the mountain shelf in plain view, seeming barely able to keep out of reach of the formidable tusks of the Boar. Over fallen logs and rocks they ran, the Boar sometimes so close that it seemed to me that he would overtake her in another second; then around a clump of brush, a big log, or rock, they would disappear for a moment, to reappear with the Cat still ahead.

"How long the chase had lasted I do not know, so interested was I, but I saw her at last at the foot of a ledge of rocks a couple of hundred yards away. One glance must have convinced the Cat that she should not ascent the cliff weighted down by the body of the Pig, for she gave it a vicious crunch and threw it aside just as the old Boar crashed through the brush a few feet away. Then with a screech of rage and victory, she sprang up the rocks and disappeared, leaving her enemy champing and frothing over the body of the dead Pig.

"Turning my attention now toward the chestnut tree, I found that the Sow and her family had also disappeared in the undergrowth, and while I was looking, the old Cat crept out of the brush and sprang up the tree to reappear a minute later with one of the kittens in her mouth. Dropping the little bobtailed fellow at the foot of the tree, she reascended and again returned with her remaining kitten; then after fondling and purring over them a few minutes, for all the world like an old house Tabby, she trotted off, followed by her family, and disappeared in the forest."

Food Habits

As evidenced by Blennerhasset's observations, bobcats will dare to prey on the young of wild boar. This is an indication of the audacity with which they set about taking food.

Many a farmer knows the bobcats will take young pigs, lambs, and even new-born calves. Deer are no less vulnerable, with fawns being the usual prey and full-grown deer attacked and subdued in times

of shortage of easier prey. Rabbits are probably the most common item in the bobcat's diet, where rabbits are abundant. The whole list of rodents living in a bobcat's range supplement the list. Bobcats will take quail and grouse and wild turkeys, and one may be sure that they will not pass up a chance to help themselves to eggs.

It is doubtful that bobcats take any significant number of game birds. Bobcats are nocturnal feeders, and most birds are safely at roost during the night.

The normal range of a bobcat will depend entirely on the relative abundance of food in his locality. Where rabbits and rodents are plentiful, the cat may prowl over only a few hundred acres; where food is scarce, the radius of activity may extend to several miles.

In many western states bobcats are considered local benefactors, since they help to keep rabbits from reaching pestiferous numbers and destroying crops. No doubt livestock raisers in these localities find this a dangerous and somewhat troublesome arrangement.

Management

Bobcats are the only North Carolina predator which are considered seriously enough to be actively controlled. In deer management areas in the western part of the state, efforts have been made to trap and otherwise dispose of bobcats to prevent them from preying on deer. Since bobcats are far from numerous in these areas, the program of controlling them is carried on in a small scale.

Nowhere in this state are bobcats protected by law, and they are taken by hunters and trappers wherever and whenever they may be found. The skins have little commercial value, but they make fine trophies, especially if treated so that the head remains with the skin and a lifelike mount of the head is accomplished.

Because of their shyness and intelligence, plus their liking for more or less inaccessible thickets and woodlands, it is doubtful that bobcats will ever be completely exterminated. Although they do at times commit serious predation on game and livestock, bobcats have a definite esthetic value. No woodsman fails to get a thrill from seeing the big tracks of a bobcat in the snow, he is even more thrilled when his dogs tree a big cat, and many hunters consider the bobcat the finest of all game that may be pursued by dogs. Bobcats will lead a pack of dogs on a merry chase that may last for hours and end with the cat tucked safely away in a cave or in a treetop out of reach of anything but a rifle.

Where bobcats have become somewhat numerous and game scarce, they do present a serious menace. But many hunters arbitrarily blame all of the ills of their favorite game on bobcats, and at the same time allow their pack of dogs to run loose in the woods during the summertime to kill fawns, does heavy with fawn, and to ravage all of the quail and turkey nests in the region.

Photo by Pennsylvania Game Commission

Bobcats are the only North Carolina predators important enough to warrant active control.

Although there is little to be said in defense of bobcats, one thing is certain: without them, life in the coastal swamplands and the mountain thickets would not be quite the same.

There is a great deal of conflicting opinion as to whether the bobcats make good pets. No one has ever completely tamed a full-grown cat, but there are those who have acquired kittens a week or two old and raised them to be affectionate and gentle pets. Others have captured tiny kittens and found them to be snarling bundles of fur, teeth and claws —even before their eyes were opened. Apparently there is considerable variation in temperament among individual bobcats just as there are differences in their household cousins.

ATTENTION

Waterfowl Hunters

Mail Leg Bands To
FISH AND WILDLIFE SERVICE
Washington 25, D. C.
Include in Message:

Kind of Bird— **Where Killed—**
Date Shot— **By Whom—**

Sixth Annual

NORTH CAROLINA R

November 6-9

Charlotte, North Carolina

IN reporting to the Sixth Annual North Carolina Recreation Conference on work in connection with the conservation of our wildlife resources, I should like to emphasize two major points. These are: (1) The value of our wildlife resources, and (2) the general program of the North Carolina Wildlife Resources Commission which is designed to conserve and establish wildlife as a resource which will provide continuing benefits for all the people in our great State.

There are two major wildlife values which deserve particular emphasis. In order of importance these are: recreational and business. The total number of North Carolinians who buy licenses for the purpose of going into the fields and forests and along the streams of North Carolina each year to find recreational enjoyment from hunting and fishing for their favorite game has grown rapidly during the past few years to approximately 400,000. Probably this many more unlicensed sportsmen and sportswomen hunt and fish legally on their own property each year. This constitutes an army of more than three-quarters of a million people who annually depend no obtaining relaxation and pleasure from the pursuit and taking of game birds and animals. Literally thousands of other North Carolinians who are not interested in hunting and fishing enjoy splendid recreation from merely being in the great outdoors of our State and observing a squirrel in a tree, a trout in a stream, a muskrat in a marsh, or one of the other many forms of wildlife with which our State is blessed. All will agree, I am sure, that a renewable natural resource which provides recreation for this many people must be dealt with carefully and wisely in order that it may be passed along undamaged to future generations.

A lesser wildlife value to the people of our State is the business value. Even though—in the pursuit of game, fur, and fish—North Carolinians and others spend each year an amount approaching $100,000,000 for sporting equipment, automobiles, gasoline and oil, lodging, food, dogs, guides, licenses, and many other items, we consider that the recreational value mentioned above is far more important. The pleasure and recreation which our people derive from the existence of wildlife in our great outdoors is so important and necessary to the welfare of our people that this value, like human character, is impossible to determine by dollars and cents standards.

The North Carolina Wildlife Resources Commission has formulated a five-point program in fulfilling its purpose and responsibilities to North Carolinians for the management, restoration, development, cultivation, conservation, and protection of Tar Heel wildlife resources. This program highlights the five important conservation activities of regulation, enforcement, education, management, and research.

The first two—regulation and enforcement—are designed to ration equally the annual huntable, trapable, and fishable surplus of wildlife among all who desire to participate in return for the purchase

Wildlife has a business value. Tens of millions of dollars is spent annually in North Carolina for its pursuit.

Sportsmen of tomorrow. Education is an important part of the Wildlife Resources Commission's program.

ATION CONFERENCE

A Report From Your Wildlife Consultant, Clyde P. Patton, Executive Director Wildlife Resources Commission

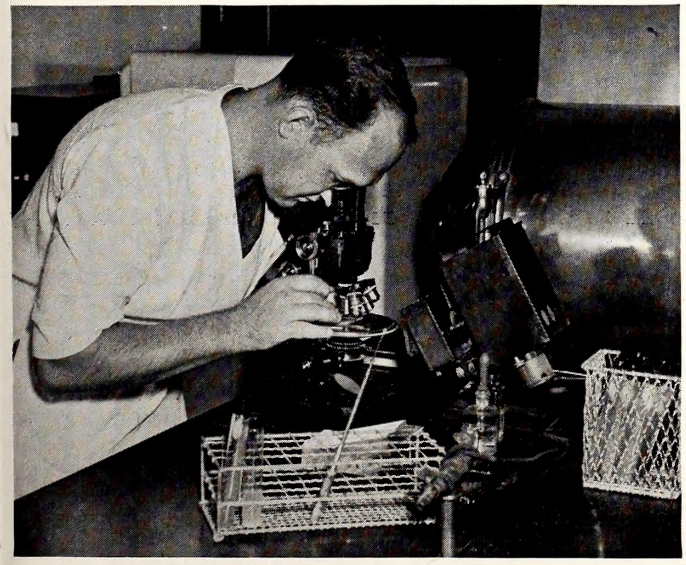
of a State license. The Commission is empowered by act of the General Assembly to establish regulations setting the annual seasons and bag limits for taking game and fish. A staff of about 125 individuals make up our Law Enforcement Division which is responsible for seeing to it that Commission regulations and game and fish laws are complied with. The effectiveness with which the Commission is able to promote the activities of regulation and enforcement will largely determine the extent of its success in promoting an effective wildlife conservation program in North Carolina.

Education, the third point in the Wildlife Resources Commission's program, is most important and is promoted through the use of illustrations together with the printed and spoken word through mediums such as magazines, booklets, posters, leaflets, radio programs, public speeches, and movies. Introducing conservation education into our public schools for the purpose of reaching the several hundred thousand high school age youths in our State with the conservation message has been one of the important objectives of our education work.

Management activities include coordination of our work with that of other land use agencies. We recognize that all living things spring from the soil; that forests provide homes for wildlife; that clean clear water is essential for fish and other forms of game; that the vegetation which the farmer grows on his land provides essential food and cover for farm game; that soil must be stabilized, not only to grow luxurious vegetation and better crops, but also to prevent our streams from becoming silt-laden biologic deserts. In this management activity the Wildlife Resources Commission emphasizes that all renewable natural resources are related and that the proper management of one depends upon the proper management of the others.

Our activity in research is providing a means for gaining knowledge which will be helpful in establishing an intelligent program to raise wildlife production levels and to proportionately increase the wildlife values of our State which were spoken of in the beginning. All progressive businesses spend a small per cent of their budgets on research. Our wildlife conservation work is being put on a business basis so that it will produce results that will insure continuing benefits to future generations.

The recognition given to wildlife conservation affairs by those who are interested in the work of the North Carolina Recreation Commission and by those who are in attendance at its Sixth Annual Conference is greatly appreciated by the Wildlife Resources Commission and its staff of employees. In my opinion, recreationalists in North Carolina are to be highly commended for their far-sightedness in recognizing the importance of managing and using wisely the great out-of-doors with all its native creatures and natural beauty as a place where true recreational enjoyment is available for all.



Research is good business. Field research is backed up by laboratory work when necessary.

All photos by Jack Dermid

Habitat improvement by planting bicolor and sericea lespedeza field borders is one phase of management.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

DUE TO UNFORESEEN CIRCUMSTANCES THE WILDLIFE COMMISSION POSTPONED ITS ANNUAL PUBLIC HEARING ON THE NEW FISHING REGULATIONS FROM NOVEMBER 13 TO NOVEMBER 24. ON THAT DATE THE REGULATIONS FOR FISHING DURING 1951 WERE SET BY THE COMMISSION AND WILL BE PRINTED AND DISTRIBUTED AS QUICKLY AS POSSIBLE.

NOVEMBER 23 WAS "WILDLIFE LAW ENFORCEMENT DAY" IN ADDITION TO THANKSGIVING DAY. ABOUT 500 REGULAR WILDLIFE PROTECTORS, DEPUTY PROTECTORS, AND NON-LAW ENFORCEMENT EMPLOYEES OF THE COMMISSION TOOK TO THE FIELD TO MAKE SURE THAT UNSCRUPULOUS HUNTERS OBEYED THE RULES. "WILDLIFE LAW ENFORCEMENT DAY" WILL BE AN ANNUAL EVENT.

DURING THE MONTH OF OCTOBER 500 FISH AND GAME LAW VIOLATORS PAID NEARLY $10,000.00 IN FINES AND COURT COSTS FOR INFRACTIONS OF THE RULES. BIGGEST HAUL WAS MADE BY A GROUP OF PROTECTORS WHO BAGGED SIXTY MEN, NEARLY ALL FROM CARTERET COUNTY, FOR SHOOTING WATERFOWL OUT OF SEASON. THESE SIXTY VIOLATORS PAID $25.00 EACH IN FINES.

CLYDE P. PATTON, EXECUTIVE DIRECTOR OF THE WILDLIFE RESOURCES COMMISSION, HAS ISSUED A WARNING TO HUNTERS TO BE SURE THAT THEY ARE EQUIPPED WITH PROPER LICENSES FOR HUNTING GAME. PERSONS DO NOT NEED LICENSES TO HUNT ON THEIR OWN LAND. TO HUNT IN THEIR HOME COUNTY THEY NEED A COUNTY LICENSE; TO HUNT OUTSIDE THEIR HOME COUNTY THEY NEED A STATEWIDE LICENSE. PATTON POINTED OUT THAT A LICENSE TO HUNT IS NOT A LICENSE TO TRESPASS. IT IS UNLAWFUL TO HUNT ON THE LANDS OF ANOTHER WITHOUT FIRST OBTAINING THE OWNER'S PERMISSION.

REPORTS OF SMALL TARPON BEING CAUGHT ON FLYRODS AT CORE POINT IN PAMLICO SOUND INDICATE THAT TARPON SPAWN IN NORTH CAROLINA WATERS. REPORTS OF BIG TARPON BEING CAUGHT IN TAR HEEL WATERS ARE OBSCURE. IF TARPON SPAWN IN THIS STATE, THERE IS A POSSIBILITY THAT BIG ONES MAY BE HOOKED, ALTHOUGH TARPON ARE NOT BELIEVED TO RISE TO LURES DURING THE SPAWNING PERIOD.

SPECIAL NOTICE

YOUR ATTENTION IS CALLED TO THE SUBSCRIPTION BLANK ENCLOSED WITH THIS ISSUE. AT FIFTY CENTS PER YEAR "WILDLIFE" IS A BARGAIN, AND AN EXCELLENT GIFT FOR YOUR FRIENDS WHO ARE INTERESTED IN HUNTING AND FISHING. IF YOU SEND IN YOUR GIFT SUBSCRIPTION EARLY THE CIRCULATION DEPARTMENT WILL NOTIFY THE RECIPIENT OF YOUR GIFT THAT YOU ARE SENDING THE "WILDLIFE" MAGAZINE FOR CHRISTMAS. GET YOUR GIFT SUBSCRIPTIONS IN IMMEDIATELY AND WE WILL SEND YOUR FRIENDS A COPY OF THIS ISSUE.

BICOLOR LESPEDEZA AND MULTIFLORA ROSE TO BE DISTRIBUTED FREE BY THE WILDLIFE COMMISSION TO FARMERS WISHING TO PLANT WILDLIFE COVER ARE NOW READY TO BE SENT OUT AND PLANTED. IF YOU HAVE NOT ALREADY APPLIED, CONTACT YOUR COUNTY EXTENSION AGENT, SOIL CONSERVATION SERVICE REPRESENTATIVE, OR WRITE DIRECTLY TO THE GAME DIVISION, WILDLIFE RESOURCES COMMISSION, RALEIGH, FOR AN APPLICATION FORM.

THOUSANDS OF VISITORS TO THE WILDLIFE COMMISSION'S EXHIBIT AT THE STATE FAIR WENT AWAY WITH A BETTER UNDERSTANDING OF NORTH CAROLINA'S WILDLIFE CONSERVATION PROGRAM. NEARLY SIX HUNDRED EXHIBIT VISITORS BOUGHT SUBSCRIPTIONS TO "WILDLIFE IN NORTH CAROLINA."

SQUIRRELS! RACCOONS! BEARS!

"Critters in the Corn"

Photo Feature By Jack Dermid

EVERY summer the Wildlife Resources Commission receives numerous complaints from irate landowners about damage to their crops by game animals. This year many reports of bear depredations to corn came from the coastal plain, particularly from Pasquotank, Camden, and Currituck counties. To obtain photographic evidence, *Wildlife's* photographer accompanied L. A. Pierce, Pasquotank County game protector, to several farms where permits had been issued to trap bears.

Damage to corn was found in every case. Bear sign was present; but with the exception of one cornfield, it was overshadowed by the depredations of squirrels and raccoons. Many farmers accept the raids of these smaller species as one of the losses to be expected in an agricultural venture. Controlling them is usually not worth the effort of swatting deer flies and mosquitoes. When a bear makes an appearance, however, the same farmer is ready to fight. He considers a bear "mean and ornery" and wants it stopped. Because "a bears a bear" it is begrudged even a single ear of corn.

As a preventative measure, landowners want to trap or kill bears at the first indication of crop damage. Bears are big, clumsy animals and leave an easily read trail when they forage in the corn. Their sign can be readily distinguished from that of squirrels and raccoons. The following two pages of photographs compare the work of all three species, but it should not be construed that they are the only animals which raid cornfields.

Farmers cannot be blamed for complaining about crop damage caused by wildlife. The damage is very real to them, but they frequently overrate its extent. It is true that bears are sometimes very destructive in cornfields. Pierce recalls seeing a five acre patch of corn completely destroyed. Thus depredations could be a serious matter to the farmer whose holdings are small.

The problem of controlling destructive game animals is a touchy one. Regulations should be fair to landowner suffering extensive damage to his fields, yet prevent individuals from using trivial depredations as an excuse to go hunting during closed season. The game laws of North Carolina take these points into consideration. Briefly, game can be killed in the act of committing depredations; bears only can be pursued within 24 hours after a raid, providing the chase is authorized by a wildlife protector; and permits can be obtained for removing birds or animals that cause continuous damage. For complete details, consult the game code or your local wildlife protector.

Two pages of pictures follow.

Cornfields adjacent to wilderness areas are subject to depredations. This one borders the Dismal Swamp, and two eighty pound bears were trapped entering it.

Protector Pierce inspects bear damage. The photo was mac from a pole scaffold from which a bear was shot actually raidin the field. Bears commonly move well inside a field before feedin

It does not take a bear long to make a well defined trail in thick vegetation. Here one leads into a cornfield in Camden County. A trap was concealed at the edge of the thicket.

Black bears walk with their whole foot on the ground, and the tracks, especially those of the hind feet, show a remarkable r semblance to the tracks of a barefoot boy.

Raccoons commonly climb up cornstalks, break out the ears, and pull them downward. The stalks may give under their weight, as below, leaving bent over stalks instead of pulled up ones as do bears.

Raccoons eat the kernels from a ear of corn without destroyin the cob—"like a hog." Both raccoons and squirrels tend to begi feeding at the field edge and work inward.

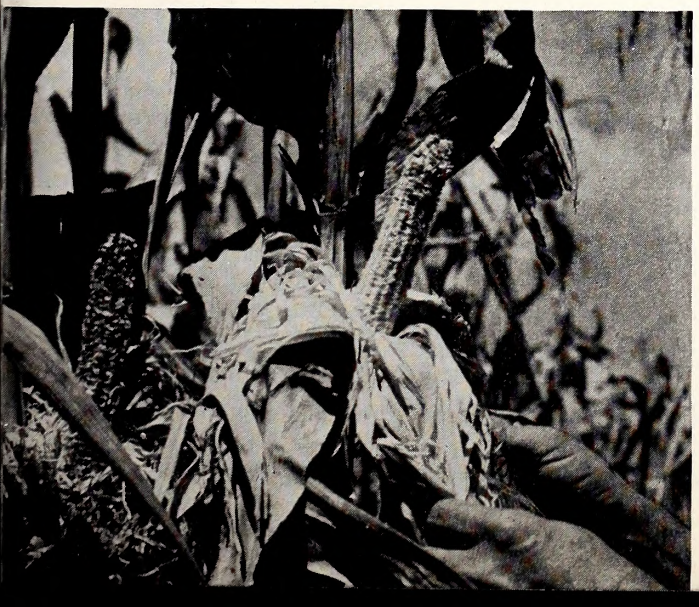
r sign. Note the corn stalk pulled up roots and all and the oth spot in the upper right corner where a bear sat while ng. Piles of debris remain.

The presence of broken and chewed cobs is an indication that bears caused the damage. Bears may feed in the cornfield or carry armfulls of stalks to adjacent woods before feeding.

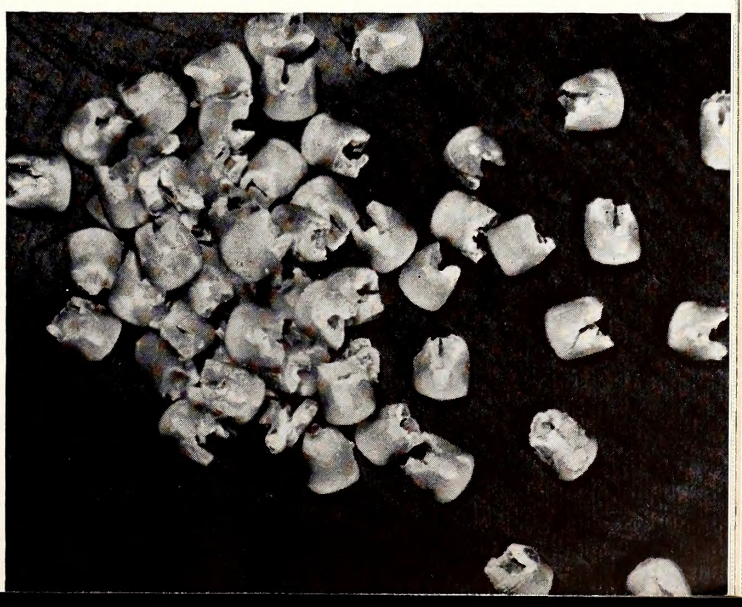
ways heed this warning! Bear traps should be conspicuously ed, for the unfortunate man who steps in one will likely er a broken leg and need help to free himself.

The jaw spread of standard bear traps ranges from ten to twelve inches. Traps should be inverted during the day to protect dogs and livestock. This one was uncovered for the picture.

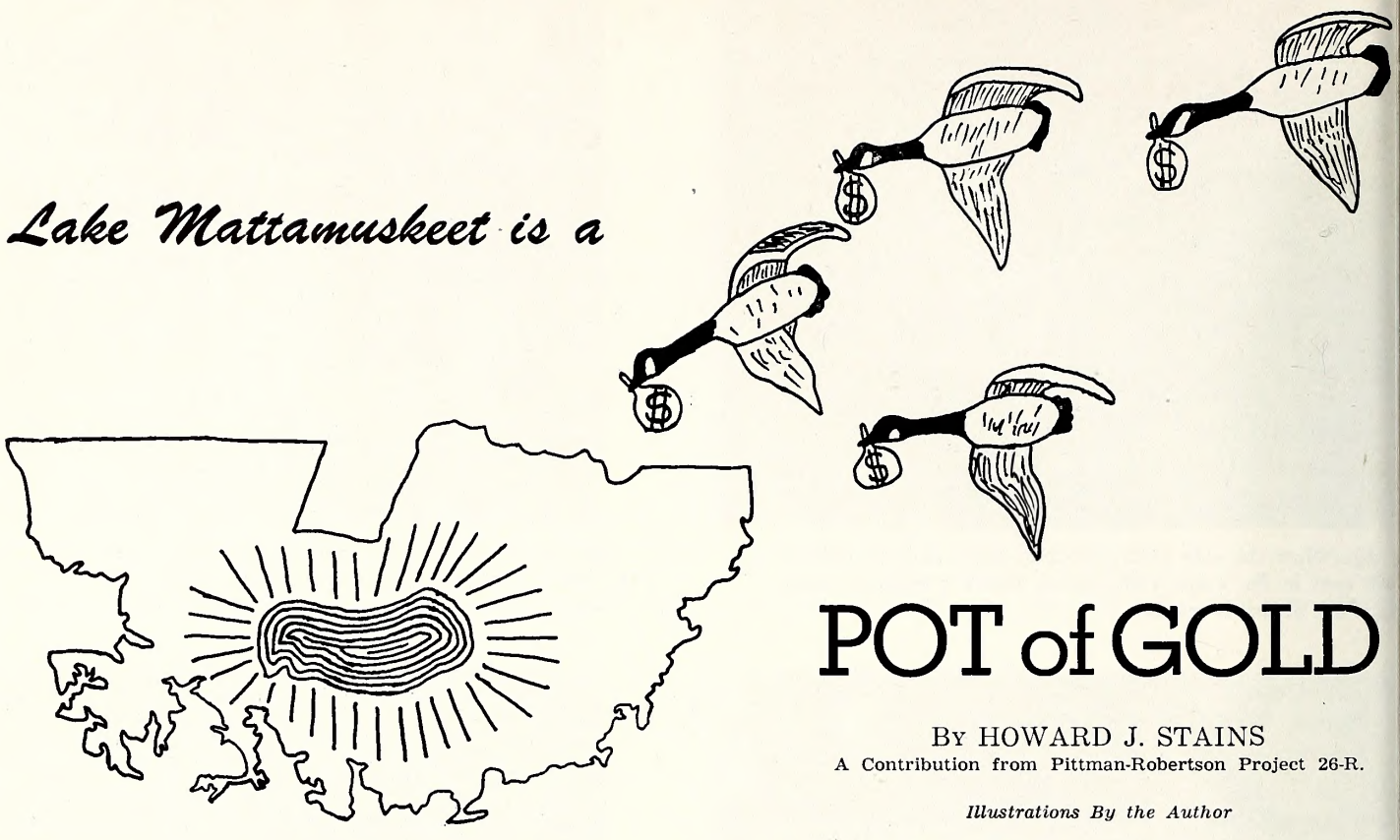
ually the cobs are left in their original positions after squirrels e raided the corn. Sometimes a whole ear is carried away, the stalks are rarely broken down.



Squirrels eat only the "heart" of the kernels when corn is plentiful and leave the hard part scattered about the base of the stalk. Below is a close-up of partly eaten kernels.



Lake Mattamuskeet is a



POT of GOLD

By HOWARD J. STAINS

A Contribution from Pittman-Robertson Project 26-R.

Illustrations By the Author

DURING these past few weeks familiar sounds have returned to Hyde county, North Carolina. Though these sounds are loved by all, the activities of their owners are both cussed and praised.

Yes, the stately Canada goose has returned to Lake Mattamuskeet and will provide unexcelled sport again this year for many waterfowl hunters.

Many crops belonging to the residents living in the lake area will be damaged; at the same time many of these same residents depend upon Canada geese for a goodly portion of their yearly income. Many natives will tell you that they wish all these invaders would disappear, but deep down inside they know that part of their food bill will be directly or indirectly provided for by these geese. In years similar to 1949 the people of the Mattamuskeet area were almost totally dependent on the proud invaders. Many of the crops were flooded by high water, the result being almost a complete loss of farm revenue. For this reason most of the farmers went into the guiding business or at least rented shooting rights during the waterfowl season. This without doubt kept many from impending hardships.

The lake Mattamuskeet National Wildlife Refuge is one of the best known Canada goose hunting areas in the United States. For years hunters have thronged to these 30,000 acres to try their luck. In 1934 the land was bought and developed into a waterfowl sanctuary. However, hunting is permitted on the refuge under managed regulations. Approximately 25 blinds are in use on the lake itself under control of experienced guides from the surrounding community. These guides are responsible to the refuge managers. Actually, rather than in the refuge itself, a greater amount of hunting is done in the surrounding fields where the hunter is more successful in obtaining his geese. Duck hunting in the fields is scarce and spotty. however; so those interested in bagging ducks or both ducks and geese, attempt to get blind reservations on the lake. These reservations are obtained through the refuge manager at New Holland.

Last year a survey was carried on in the Mattamuskeet area to determine the total kill, the hunter success, and the amount being spent on the sport. The method of making these determinations was through the use of kill record forms kept by various leading guides around the lake and expenditure forms left with guides and at hotels. Results of portions of the survey were not so successful as was hoped but at least some indication of the economic value of the sport to the State, to the hunters and most of all to the people inhabiting the area, was obtained.

Last season saw the arrival of the greatest number of hunters ever to visit the area. Results of the survey show that 6,558 hunters shot 11,243 geese and 1,245 ducks. The lake hunters averaged 0.96 geese and 0.61 ducks per day, and field hunters averaged 1.20 geese and 0.01 ducks per day. These 6,558 hunters spent 9,484 hunter days at the lake for an average of 1.45 days per hunter. Of these 6,558 hunters, 70% or 4,601 spent only one day at a time at this sport, the remaining 30% spending two or more days in succession at the lake.

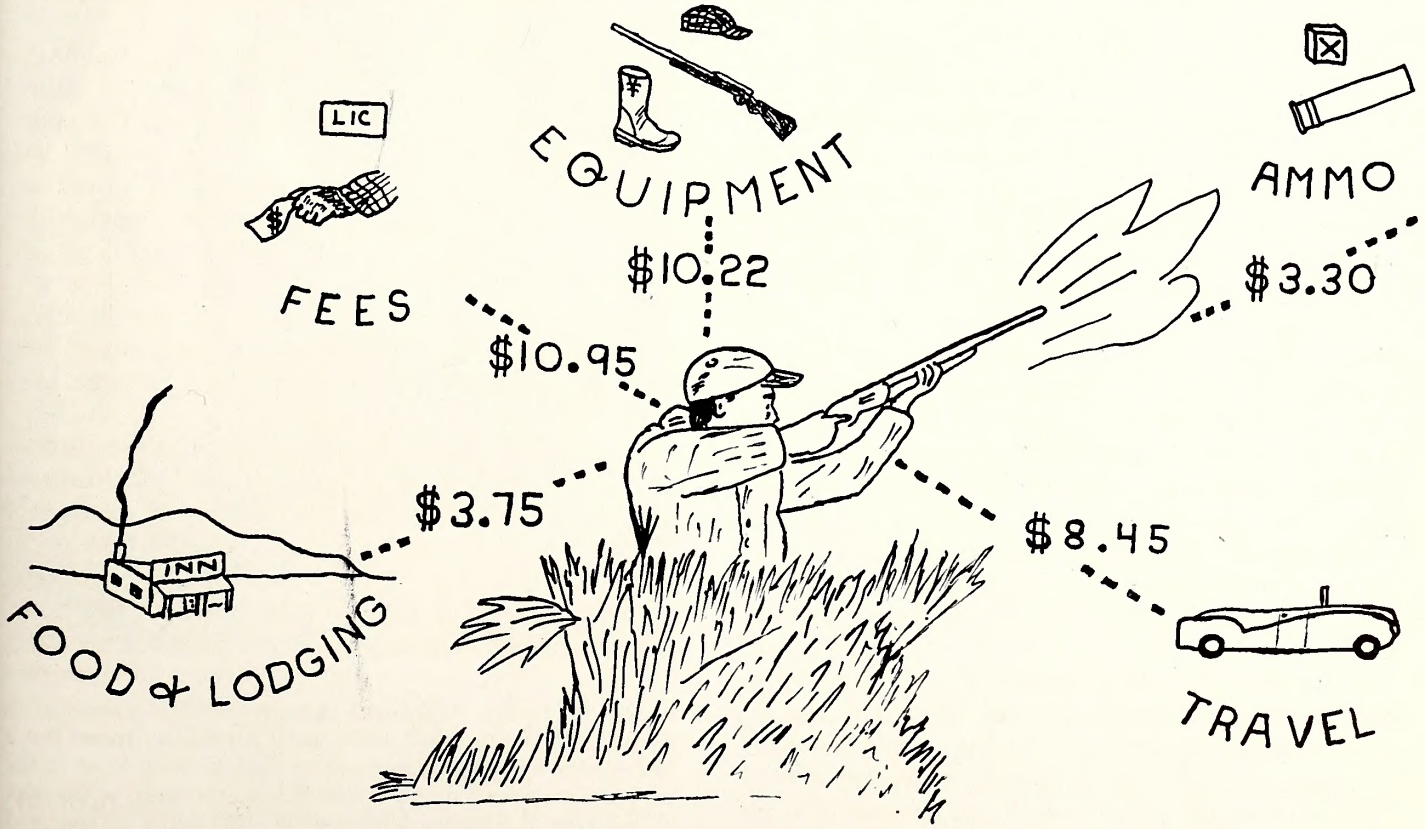
Assuming that any hunter driving less than 100 miles to reach the area did not spend the night in

Hyde county, we find that 7.6% or 501 hunters of the non-county residents fall into this category. Of the 712 county resident hunters, the average hunted 6½ days during the season for a total of 4,637 hunting days. This when added to the 501 non-staying, out-of-county hunters gives a total of 5,108 hunting days either in which hunters did not spend the night in the county or which are to be accounted for by hunters who already lived there. This figure leaves 4,376 hunting days spent by over-nighters. At an average cost of $5.50 per day for food and lodging, these over-nighters spent $24,068.00. Assuming one meal and miscellaneous items such as softdrinks and cigarettes for the remaining 501 out-of-county residents at a cost of no less than $1.00 each, we have an additional $501.00 for a grand total of $24,569.00 being brought into the county and spent for food and lodging. Anyone acquainted with this region will realize that these estimates are conservative.

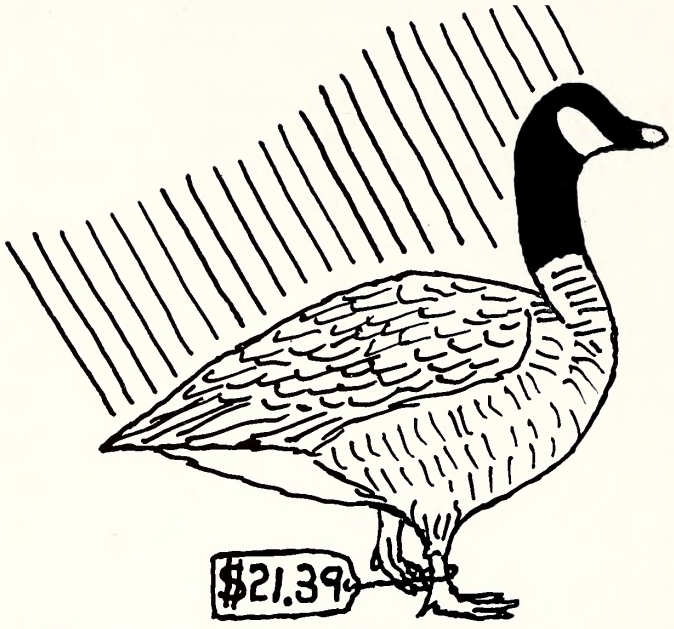
Sportsmen from North Carolina, Ohio, New York, Illinois, Virginia, Pennsylvania, Colorado, Indiana, Missouri, Massachusetts, Kansas, Maine, West Virginia, New Jersey, Georgia, South Carolina, Florida, Delaware, Maryland, Connecticut, Tennessee, Alabama, Michigan, Kentucky, Wisconsin, and the District of Columbia hunted at the refuge during the 1949-50 season. The average car carrying these hunters travelled 552 miles and averaged 2.9 hunters per car. These hunters travelled a total of 1,108,000 miles in coming from and returning to their homes. Assuming the average cost for travel at 5¢ per mile, here was an expenditure of $55,400.00. This does not include any side trips that might have been made, or the mileage put on after the hunting vicinity was reached. Of course, the largest portion of this expenditure was not made in Hyde county alone but all up and down the routes leading to the area. At least 50 miles, however, is travelled in the county itself and at 5¢ per mile there is at least a minimum county expenditure of $5,630.00.

From the responses received from the hunter expense blanks placed about the county, the average hunter spent $10.22 for equipment bought especially for the trip duck-goose hunting. This includes such items as boots, duck calls, and especially warm clothing. The great majority of this expenditure was made in the hunters' home town, although an average of 19¢ per hunter was spent for the rental of boots in the area alone. Using the $10.22 as an average expense for all hunters visiting the area, there was an expenditure of $67,022.76 of which $8,387.38 was left in the county. In the same returns, the average hunter shot 33 shells, at 10¢ per shell. This is an average expenditure of $3.30 per hunter and a total expenditure of $21,641.40. Assuming that the average hunter brought at least one box of shells with him and that he will buy in the area all additional shells shot, we have a county expenditure of 8 shells or 80¢ per hunter. To this expenditure of $4,676.80 should be added $2,349.60 spent by county residents for a total of $7,026.40.

The non-county hunter must first possess a license, an expenditure of from half the price of a combination license or $2.05 to a non-resident license of $15.50. Next he must have a duck stamp, an expenditure of $2.00. If he hunts on the lake he must



A break-down of the average expenditures per hunter.



The average cost per goose killed at Lake Mattamuskeet.

buy a lake permit for $1.50 and pay a guide fee of $5.00. If he hunts in the field he must pay a guide fee of $5.00 or shooting rights with no guide for $1.50. There were 712 county licenses sold for $1.10 and expenditure of $783.20 of which 10¢ per license stayed in the county or $71.20. An estimated 1,186 non-resident hunters bought licenses at a cost of $15.50 each for a total of $18,386.00, of which 403 were sold in the county for a county income of $201.50. The remaining 4,660 hunters bought either a combination or a state hunting license. In Hyde county 209 state licenses were sold and 159 combination licenses, or a percentage of 57 and 43 respectively. Assuming that these percentages hold true for the total number of hunters remaining, there were 2,013 combination hunters spending $2.05 each for a total of $4,126.65, of which $7.95 goes to the county, and 2,647 state hunters spending $3.10 each for a total of $8,205.70, of which $20.90 goes to the county. Totalling the entire license sales, there was an expenditure of $31,501.55 spent for license fees of which $310.55 was left in the county.

Next let us consider the fees paid to guides, all of which is left in the county. At the lake 9,484 hunter days were spent, of which 4,637 were spent by residents of the area, leaving 4,847 hunter days for non-residents. At a fee of $5.00 per hunter day, these 4,847 hunter days cost the hunters $24,235.00, which went to some 87 licensed guides for an average income of $278.56 per licensed guide. In addition, 1,987 lake permits were sold for a total of $2,980.50.

It was also necessary for these 6,558 hunters to buy a duck stamp for $2.00, an expenditure of $13,116.00. Thus expenditures on lake fees, guide fees, duck stamps and licenses amounted to a total of $71,833.05, an average of $10.95 per hunter and a county income of $27,546.05.

The sport waterfowl hunting in Hyde county, therefore, results in a total expenditure of $240,466.24, at an average of $36.67 per hunter and costing the average hunter $21.39 per goose or $19.26 per bird (duck or goose) bagged. Hyde county realized an income of $73,158.83 which is more than one-third the total income received by the county from the eleven leading farm crops. Perhaps Hyde county is that mythological pot of gold found at the end of the rainbow.

TABLE OF EXPENDITURES

Item	County Received	Total Expenditure	Average Per Hunter
Food and lodging	$24,569.00	$ 24,569.00	$ 3.75
Transportation	5,630.00	55,400.00	8.45
Equipment	8,387.38	67,022.76	10.22
Ammunition	7,026.40	21,641.40	3.30
Fees	27,546.05	71,833.05	10.95
TOTAL	$73,158.83	$240,466.24	$36.67

Deer Injured By Dogs

Photo by Gene Brown

Lester A. Pierce, Pasquotank County wildlife protector, is shown releasing a small buck after having it treated by a veterinarian for wounds inflicted by dogs running loose in the woods. The injured deer was found last September at the edge of the Dismal Swamp. Uncontrolled dogs are a serious and constant threat facing North Carolina's wildlife.

Outbreak Occurs in Wake County

NEWCASTLE DISEASE

By FRANK R. CRAIG
Assistant Poultry Pathologist
N. C. State College of Agriculture and Engineering

NEWCASTLE disease, a respiratory nervous disorder, has been reported in various species of wild and domestic fowl since it was discovered in the East Indies in 1926. It was diagnosed, later during the same year, in chickens in the area of Newcastle, England, from which it gets its name. The disease was first recognized in this country in California in 1940 where it was called pneumo-encephalitis. It was next reported in New Jersey in 1942. Natural outbreaks and experimental cases have been reported in the following domestic birds: chickens, pigeons, turkeys, ducks, geese, guinea fowls, swans and parrots. It has also been reported as occurring in nature in the following kinds of wild birds: mayas, martins, starlings, sparrows, partridge, and crows. From information at present available, it has not previously been reported from native waterfowl. Earlier outbreaks may have gone undiagnosed, however.

The disease is characterized by the sudden onset of a respiratory infection—a large number of birds being infected in a short period of time. About ten days or two weeks later, nervous symptoms appear, these consist of twisted necks, leg paralysis, and uncontrolled movements of the head and neck. The disease is caused by the virus *Tortor furens*. Mortality varies in different age groups with the heaviest incidence occurring in young birds. Resistance seems to increase with age.

The owner of a small preserve near Raleigh, N. C., reported the outbreak of a disease in his flock of waterfowl during September, 1949. On the area are several unfenced ponds on which he had placed a number of native and exotic wild waterfowl and a few domestic Pekin ducks and Chinese geese (Table I). The wing clipped birds use all the ponds, often walking from one to the other during their daily activities. On October 3, 1949, a female muscovy duck that had died the previous day was submitted to the Poultry Disease Laboratory, N. C. State College, for examination. A severe air sac infection was found. Bacteriological examination was negative for a contagious disease. On October 10, 1949, a live female muscovy was brought in. This bird was unable to walk or fly, the head was drawn over its back and all attempted movements were aimless and extremely jerky. A blood sample was collected and submitted to the Veterinary Division of the North Carolina Department of Agriculture for a Newcastle test. The hemagglutination-inhibition test was positive for this disease. Postmortem examination revealed the presence of pus on thickened posterior thoracic and abdominal air sacs; conditions typical of the disease. Bacteriological examination for a contagious disease was negative on this bird also.

Since mortality was high and continued over a

These laboratory chicks show characteristic nervous symptoms of Newcastle disease: twisted necks, leg paralysis, and uncontrolled movements of head and neck.

Photo courtesy State College Poultry Department

Photo by Jack Dermid

The outbreak occurred on this fishpond. Ponds inhabited by domestic waterfowl may be a source of infection to wild birds.

period of several months, additional birds were requested for examination at a later date in order to investigate the possibility of two diseases causing the mortality. On November 25, 1949, three hybrid ducks (mallard x black ducks) from the area were examined and found to have typical manifestations of Newcastle disease. Bacteriological examinations were negative. No other birds from the preserve were submitted for examination.

Table I contains a breakdown by species of the birds present and the mortality up to December 18, 1949. There had been no additions to the flock for over a year except for two pied-billed grebes (didappers) and an occasional migratory wild duck. The grebes appeared approximately two weeks before the outbreak was observed. One of these was found dead during the peak of the disease. The other bird had disappeared before the disease became apparent.

TABLE I.

Species	*Number Present*	*Age Group*	*Number Dying*
Pied-bill Grebe *Podilymbus p. podiceps (Linnaeus)*	2*	Mature	1
Black Swan *Chenopis strata (Linnaeus)*	2	Immature** (Feathered)	2
White Chinese Goose *Cygnopsis cygnoid (Linnaeus)*	2	Mature	1
Canada Goose *Branta canadensis*	5	Mature	1
	3	Immature (Feathered)	0
Snow Goose *Chen hyperborea*	1	Mature	1
Blue Goose *Chen caerulescens (Linnaeus)*	2	Mature	0
White Pekin Duck *Anas platyrhynchos*	3	Mature	2
Crossbred Duck (Mallard x Black Duck)	16	Mature	14
Anas platyrhynchos x Anas rubripes	10	Immature (Feathered)	10
Black Duck *Anas rubripes*	1	Mature	1
Muscovy Duck	8	Mature	8
Cairina moschata (Linnaeus)	22	Immature (Feathered)	22
	22	Immature (Unfeathered)	22
Total	99		85

* Only 1 grebe was observed after the outbreak began.
** All birds listed as immature were hatched during 1949.

Approximately 85 per cent of the birds constituting this flock died within 2½ months after the outbreak occurred. Canada geese and blue geese were the only species not seriously affected. Only one Canada goose, a very old female, died. This death could have been due to natural causes; unfortunately, the carcass was not examined.

The problem of controlling mortality in wild waterfowl is a difficult one, whether it be on a large or small refuge. The presence of Newcastle disease in such birds could be disastrous since they are concentrated during the winter months, a time when the disease seems to be most prevalent.

Since the disease is becoming widespread in chickens, owners of waterfowl refuges should take extreme precautionary measures against the close association of chickens and domestic waterfowl with wild waterfowl. The chicken is most likely to come in contact with the disease and could easily transmit it to the waterfowl.

Once the disease occurs on an area, it is virtually impossible to prevent its spread to all waterfowl present. Complete eradication and disposal of all the birds is the only practical procedure since survivors of such an outbreak may serve as carriers. This would pose an almost impossible task on large areas.

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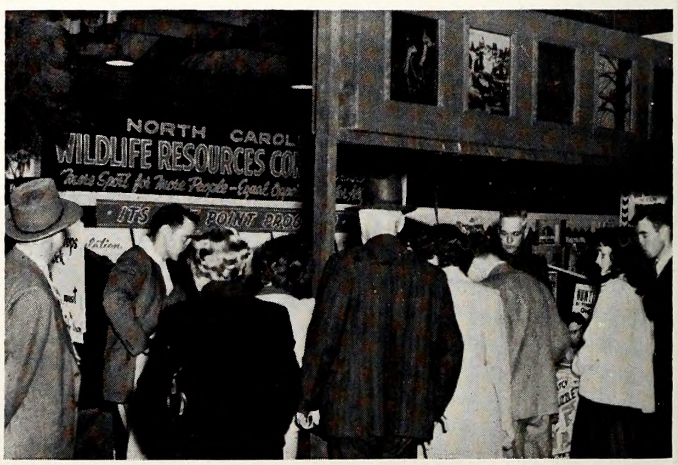
* * * * *

The writer is indebted to Dr. F. S. Barkalow, Jr., Head of Zoology, Division of Biological Sciences, for criticisms and helpful suggestions; also to Dr. Alexander Wetmore, Secretary of the Smithsonian Institution, for supplying the scientific names of the waterfowl listed in Table I.



Visitors to the State Fair will remember this scene. The educational exhibit sponsored by the Wildlife Resources Commission proved very popular. Many Wildlife subscriptions were sold.

THE STORY OF THE DINGELL BILL

By MICHAEL HUDOBA
Washington Editor of Sports Afield

(Editor's Note: Here it is, all wrapped up in one bundle, the story of the Dingell Bill for the restoration of American game fishes. MICHAEL HUDOBA secretary of the OWAA was present at its signing by President Truman and in recognition of the great part he has had in its rough passage before becoming a law, he was presented with one of the three pens with which the President signed the bill. It is your editor's belief that the following article will answer any question you could possibly ask about the Dingell Bill, how it was passed, what it is supposed to do and how it will be administered.)

President Truman has signed the Dingell bill into law. (Public law 681—81st Congress 2nd Session.)

With the stroke of his pen, the President cleared the way for sport fish restoration programs across the nation by each of the States and Territories.

This action culminates an eleven year fight by sportsmen and writer-conservationists to expand attention for restoration of the nation's sport fish resources. As the program gets underway, it should mean more bites per hour for each of the country's 15½ million fishermen, their children and children's children.

The fight to win this most important fish and wildlife conservation measure of recent years began to build up a head of steam when the Outdoor Writers who endorsed the bill in its last three conventions, and its membership crusaded for its passage.

Through each of these steps that included passage by the Congress twice, a Presidential veto, objections and efforts for crippling amendments, including Committee pigeonholes, the outdoor writers influence in building up grass roots support to clear the hurdles was invaluable, and meant the difference between defeat and victory.

The bill is now law and the most important issue ahead is to get to work to realize its benefits. This will need, first, assent by the Governor of each state to cooperate in the program, until the first session of the State Legislature which should be asked to pass enabling legislation to participate in the program that will function parallel to the P-R wildlife program except that it is for sport fish.

The enabling legislation will require provision in state law that no fishing license money may be diverted to programs other than fishery conservation, and is an important feature to prevent raids on sportsmen's license funds. Secondly, it will require adequate state laws for fishery conservation.

The sport fish restoration law became effective July 1, 1950, at which time the ten percent tax on sport fishing tackle which includes rods, creels, reels and artificial lures, baits and flies will be earmarked for the Dingell-Johnson program. Previously this tax which had been paid by sportsmen for more than a decade, and collected at the effort and expense of the tackle manufacturers had gone into the general U. S. Treasury fund.

The first allocation of tackle money which is now all earmarked for federal aid to states for sport fish restoration will be made July 1, 1951. These funds will be allocated annually and be available for expenditure by the states for two years, after which the unexpended funds revert to the Fish and Wildlife Service for fishery research. It may be expected that little of these funds, if any, will revert since there is such a large need for fish restoration projects.

The formula for distribution of the funds to the states is based on a proportion of 40 percent of the areas including Great Lakes and Coastal waters, and 60 percent on the basis of total fishing licenses sold by the states. To assure more equitable distribution of the funds, no state may receive more than five percent no less than one percent of the total amount available.

Before the allocation is made according to the formula of the law, up to eight percent may be deducted for administration of the law, and special lump sum allocations of $75,000 to Alaska, $25,000 to Hawaii, and $10,000 each to Puerto Rico and Virgin Islands taken out.

Using the formula which was approved by the States, and based on an estimated $3,000,000 tackle tax income, the apportionment on the basis of 15,478,570 fishing licenses sold last year, the States would expect to receive the following amounts:

Alabama	$ 30,008.02	Florida	46,931.96
Arizona	43,813.83	Georgia	36,242.17
Arkansas	44,380.30	Idaho	47,220.23
California	132,000.00	Illinois	98,041.18
Colorado	65,442.24	Indiana	73,625.29
Connecticut	26,400.00	Iowa	60,489.79
Delaware	26,400.00	Kansas	49,243.76

Kentucky	43,553.18	North Dakota	27,566.06
Louisiana	26,400.00	Ohio	107,611.66
Maine	28,621.52	Oklahoma	63,684.42
Maryland	26,400.00	Oregon	58,829.89
Massachusetts	26,527.31	Pennsylvania	76,841.15
Michigan	132,000.00	Rhode Island	26,400.00
Minnesota	115,108.67	South Carolina	26,400.00
Mississippi	29,035.92	South Dakota	37,946.62
Missouri	83,006.88	Tennessee	56,765.65
Montana	66,214.81	Texas	114,750.97
Nebraska	$ 47,963.08	Utah	36,019.38
Nevada	38,295.36	Vermont	26,400.00
New Hampshire	26,400.00	Virginia	38,383.22
New Jersey	26,400.00	Washington	63,590.98
New Mexico	48,201.39	West Virginia	42,081.00
New York	87,353.62	Wisconsin	124,995.39
North Carolina	38,911.39	Wyoming	41,101.73

While the sums may not seem large, it must be borne in mind that this is a windfall which will come every year. The three million dollar figure is used because nowhere is there any reliable estimate of the tackle tax income. As license sales increase in the individual States, it will reflect in a larger share by that state of the annual apportionment.

The sums listed are the federal share of the cost of the sport fish restoration project which is 75 percent. The state will match this with 25 percent of the project cost, and they will develop, manage and own the project.

The Dingell-Johnson program will be administered by the Fish and Wildlife Service to determine that sport fish projects are substantial in nature. But like the P-R wildlife program, there is considerable discretion on the part of the States in the types of projects they undertake.

In fact the law says that, "fish restoration and management projects shall be construed to mean projects designed for the restoration and management of all species of fish which have material value in connection with sport or recreation in the marine and/or fresh waters of the United States."

With the vast need of work necessary in stream and lake improvement, acquisition of rights to posted fishing waters, and numerous fish restoration projects, there is concern among thinking fish conservationists that these funds should not be diverted to fish hatchery construction. Hatcheries, if needed, can be developed through direct appropriations. And these earmarked funds thus used in other constructive projects, as well as creation of more fishing water. The latter is particularly needed in many states.

There is also concern that administration of the law will not be subjugated and lost within other programs of the Fish and Wildlife Service; but retain its entity as a sport fish restoration program. The current federal aid to states wildlife section of the Service could well operate the business end of keeping accounts and administrative etcetera. But it would appear that the biological phases of fish management could be kept separate without the need of creating new offices, or an expensive administrative setup by using the facilities of the fishery section.

Finally, thanks for passage of this vital sport fish restoration measure goes not only to the grass roots conservationist, but sportsmen's organizations, national conservation groups, and writers who crusaded for its passage. It was the united front that won the victory.

Within Congress thanks are especially due to Rep. John Dingell, author of the bill; to Rep. Clark W. Thompson, Chairman of the Subcommittee on Fish and Wildlife whose able know-how and yeoman service steered the bill through the House, to his Subcommittee members who each supported the bill and worked it through the difficult formative stages, also to Rep. Thor Tollefson who was floor manager for the bill when it came up for debate.

On the Senate side, a special thanks is due to Senator Edwin Johnson who not only introduced the companion bill in the Senate, but who gave such prompt action in his Interstate and Foreign Commerce Committee when time was critically important.

And finally thanks to President Truman for recognizing the interests of sportsmen in signing the bill, and to the Interior and Treasury Departments and Budget Bureau for favorable reports to Congress. I would suggest that those who were in correspondence with their Senators and Congressmen on this matter let them know you are interested in their support which won results.

The unsung heros in this program are and will be the fishing tackle manufacturers who have the job of collecting the tax, keeping extra records, and numerous other details in connection with the excise tax program which supplies the funds for the law.

This victory for constructive conservation is refreshing to the conservation movement, since it shows that a united effort can bring results.

Listen to

"The Tar Heel Wildlife Review"

Now Heard On Twenty-One North Carolina Radio Stations. Check Your Local Paper For Time And Place.

Roland McClamroch, standing, presided at the banquet. He was reelected president of the federation.

Wildlife Federation Meeting

The North Carolina Wildlife Federation held its sixth annual convention at the Sir Walter Hotel, Raleigh, on October 16-17.

Highlight of the meeting was the banquet where Governor Scott spoke to the members on the evils of stream pollution. He recommended that legislation be enacted to prevent the spoiling of streams by manufacturing and other industrial plants.

Governor Scott crowned Carolyn Thornburg, 15, of Durham "Miss North Carolina Wildlife of 1950" at the close of the banquet. The statewide competition was based upon ability in shooting and other outdoor sports as well as beauty.

Officers for the coming year were elected as follows: Rcland McClamroch of Chapel Hill, President; J. L. Murphy of Ki'l Devil Hill, Dr. Herbert Fox of Durham, and Wayne Williams of Asheville, vice-presidents; Frank Marbry of Badin, secretary; and Kenneth Putnam of Chapel Hill, treasurer. Ross O. Stevens of Raleigh is executive secretary of the federation.

Fisheries Seminar

Unique in the history of the Fish Division of the Wildlife Resources Commission was the seminar of fisheries investigators and warm water hatchery personnel held in Raleigh on October 5-6. Each biologist discussed in detail his work of the past six months so that all present could obtain an over-all picture of the work being done by the section to improve fishing in North Carolina. Biologists participating were, left to right: W. E. Ellis, Hayden Ratledge, and Duane F. Raver, fisheries investigators; J. H. Cornell, chief of the Fish Division; George Scruggs, hatchery superintendent; Maurice Bryant, supervisor of trout production; and Eugene Smathers, hatchery superintendent.

All Photos by Jack Dermid

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

How many of us look at December, 1950, and see a special duty and obligation to our hunting and fishing? Frankly, it would be a safe guess to say that thoughts of Christmas and its problems—and particularly that of paying the bills, with taxes and costs of living going higher—will constitute a large part of our worrying time.

Let us not forget that a group of citizens whom we chose at the polls will meet in Raleigh early in January. The primary purpose of this group will be to make new laws, change existing laws and erase old laws. Some of the laws that the General Assembly will be concerned with will be those regulating hunting and fishing—our hunting and fishing!

The sportsmen and women of North Carolina have proved their interest and concern about their game program and its future. These same folks have gone to the polls to prove their interest and concern for their government. Now is the time for everyone to see that their game program gets a break in the General Assembly. How?

Obviously, a large proportion of our legislators are not game and fish experts. Their training and experience has not for the most part been in these scientific fields, yet they are called upon to vote for or against measures which deal directly with the future of our fish and game! It's a hard thing to decide what is best under circumstances such as these. The least we can do as interested hunters and fishermen is to see that our representatives are kept informed of our needs and desires. This is the second part of our duty, the first is to be sure that we are in agreement with other sportsmen, not only in our city or town but in the state, on the issues coming before the Assembly. Such agreement may be had only by the cooperative approach to the issues affecting the game program and an ambitious and concerted effort to see these goals accomplished.

I should like to extend my warmest personal greetings of the season to sportsmen throughout the state and best wishes for the coming year.—W.D.

From Mr. W. G. W. of Carthage, N. C., the following: "If a party builds or owns a pond on a river and does not own all the land joining the water line, can he prohibit fishing in the pond? If another party owns land joining the pond and reaching out into the water, can he fish and allow others to fish all over the pond?"

The answers to water rights questions have confused experts more qualified than I, and it seems that in attempting to answer the questions asked above we should know the conditions under which the pond owner was permitted to build a pond which would flood the land of another. If such permission had been given then the pond owner's deed should be revised to describe the pond and to set forth the agreement as well as to establish the authority of the water. Assuming this had been done, it is possible that the pond owner could prohibit fishing even to the owner of lands covered by the pond. This answer is based on first hand knowledge of a similar instance in which the deed is written as described.

From Mr. F. T. H., Bennettsville, S. C., "I noticed in the "Charlotte Observer" some weeks ago that a sportsman in North Carolina had built a small pond and stocked it with German carp which he obtained in Wisconsin. Please advise why anyone would stock a pond with carp. Is carp a game fish?"

To the best of my knowledge, such a pond is operated in or near Winston-Salem and is a popular spot for fishermen who pay for the privilege of catching one of these large fish on light tackle. I would suggest that if you want to test the durability of your equipment, you bait your hook with a grain of canned corn or dough bait and drop it near a ten pound carp! Carp are not generally accepted as food fish, yet there are several recipes for the preparation of their flesh which give very tasty results. By the way, if some of these recipes were submitted, we would try to get them published in a future issue.

Mr. R. B. S. of Waynesville, N. C., asks,". . . How many fawns does a doe normally bear?"

It is generally believed that nature has a hand in regulating the crop, not only of deer but other wild creatures, through the food and consequent health conditions. For the first time, a doe normally has one fawn, but if she is in excellent health and plenty of nutritious food is available, she might be expected to bear several sets of twins and sometimes triplets. With poor food conditions, a doe will produce only one fawn a year.

Mr. F. R. B. of Halifax, Virginia, asks, "Is there any way which a hunter may use to determine the age of a deer he has killed?"

About the only way to determine the age of a deer accurately is the inspection of the teeth and this a highly specialized method depending on the knowledge and skill of the person doing it. The antlers of a buck are more of an indication of its vigor and condition than its age.

Many times in the past this page has welcomed contributions from our readers and the following from Raymond A. Watson, Supervisor of Wildlife Protectors in District 2, proves that much interesting material can be made available. Won't you help?

"Enclosed herewith is two dollars ($2.00) for permit to keep game animals in captivity; namely, one gray fox for Mr. J. L. Slann, Glenburney Gardens, New Bern, N. C.

"I have personally investigated this case and find that actually the fox is not in captivity, but runs at large with a pack of beagle hounds. He sleeps in the same pen with the dogs but climbs out at will. When the pack is running, the fox follows in the chase but does not bark."

NOTE: As no charge is made for permits to keep wild animals in captivity, the money was returned to Mr. Slann.

Wingate, North Carolina
October 3, 1950

Editor of "Wildlife in N. C."
Box 2919
Raleigh, North Carolina
Dear Sir:

My seventh grade class in the Benton Heights School, Monroe, North Carolina, has recently organized a Junior Wildlife Club. The pupils are very interested in studying many kinds of wild animals that are found in North Carolina this year.

The following pupils would like to become "Pen Pals" with pupils in other schools. They would especially like to hear about the work that is being done in the different wildlife clubs of the state.

Shelby Walden
Route 3
Monroe, N. C.

Barbara Helms
516 Benton Street
Monroe, N. C.

Ronald Rummage
100 East Meadow St.
Monroe, N. C.

Donnie Helms
1010 Cherry Street
Monroe, N. C.

Helen Simpson
906 Engleside Street
Monroe, N. C.

Ruth Surratt
625 Benton Street
Monroe, N. C.

Glenda Blackwell
Box 148
Monroe, N. C.

Barbara Tart
101 East Allen St.
Monroe, N. C.

Johnny Hargette
1405 Iceman Street
Monroe, N. C.

Peggy Broome
103 Holly Street
Monroe, N. C.

Alice Tarlton
Route 3
Monroe, N. C.

Gary Mills
300 Phifer Street
Monroe, N. C.

Jimmy James
1024 Concord Ave.
Monroe, N. C.

Ruth Carnes
403 Walnut Street
Monroe, N. C.

Glenda Fowler
Box 168
Monroe, N. C.

Virginia Pressley
Route 2
Monroe, N. C.

Esther Moore
Box 936, Route 3
Monroe, N. C.

Lynn Crisco
400 King Street
Monroe, N. C.

Lionel Crisco
400 King Street
Monroe, N. C.

Arline Broome
105 Heath Street
Monroe, N. C.

Nancy Starnes
1109 Iceman Street
Monroe, N. C.

Verla Stanton
Route 3
Monroe, N. C.

Barbara McRorie
711 Phifer Street
Monroe, N. C.

Bobby Kilgore
905 Gilman Street
Monroe, N. C.

Jeanette Earp
1404 Charlotte Ave.
Monroe, N. C.

We plan to work out units about snakes, groundhogs, deer, birds, coons, bears, foxes, owls, hawks, crows, fish, otters, doves, and weasels.

If you have any material on any of the above subjects or any other interesting animals, we would like very much to have it as we need it very much.

Thank you for anything that you may send.

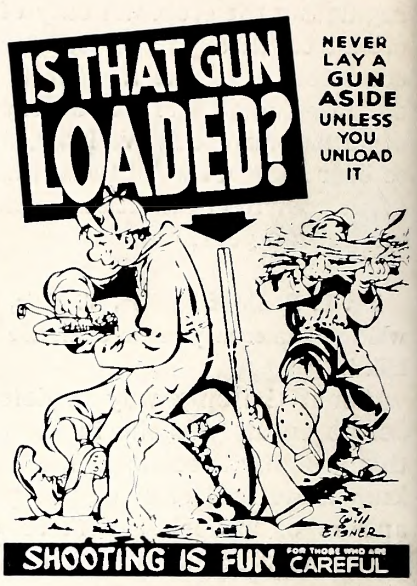
Very truly yours,
/s/ Mrs. Bruce Bivens

This photograph shows some of the illegal devices used by the game hog in destroying our finny tribe. These traps were taken in the inland waters of Richmond County by District Protector Walter Bray and Cecil Poole, Game Protector.

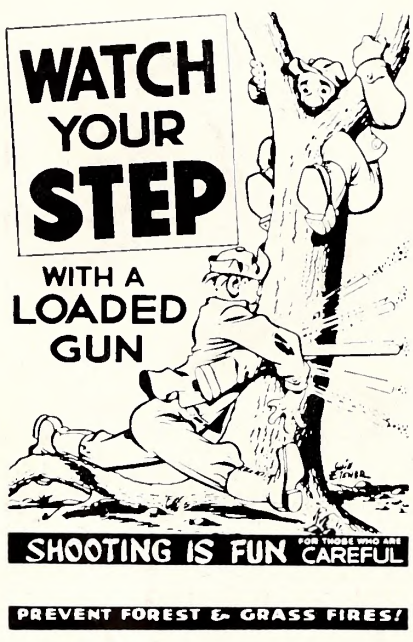
These wire baskets are difficult to locate. Different varieties of food are placed in these baskets. They are then taken out in deep water and submerged with no leader attached to them. It is a hard difficult job to locate them. If this wholesale violation continues in our inland waters in North Carolina, in the near future all varieties of our fish will be as the buffalo, the heath hen and elk will be extinct.

The Wildlife Resources Commission is calling upon all true fishermen to assist every known way possible in helping to curb this wholesale violation that is being illegally practiced in our inland waters of North Carolina. These wire traps catch game fish as well as course fish and when game fish are confined in this particular type of illegal device, there is no way of escape unless taken out by some human hand.

Walter Bray, District Game Protector
Richmond County



LET'S CONSERVE WILDLIFE — AND HUMAN LIFE!



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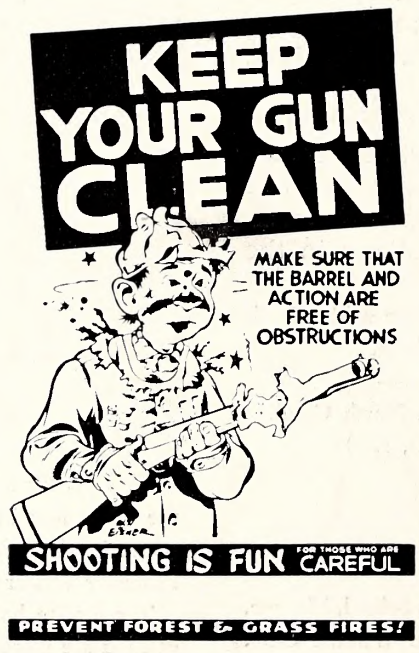

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Wildlife
IN NORTH CAROLINA

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Photo by Jack Dermid

JANUARY WOODS

January in North Carolina is a month of contrasts. It may bring winter cold and snow or spring-like days with hepaticas blooming on the south slopes. It marks the beginning of lean times for wildlife. The autumn harvest is fast disappearing, and from now until spring adequate food and cover are the keynotes of survival.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

STATE OF NORTH CAROLINA

W. KERR SCOTT
Governor

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January 1951 Vol. XV, No. 1

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
JACK DERMID, Managing Editor
MARTY MABRY, Circulation

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COVER

Win Donat portrays the clever gray fox as a reminder that the best months for fox hunting are ahead. During January, February, and March, many good hounds will be outwitted in the chase.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

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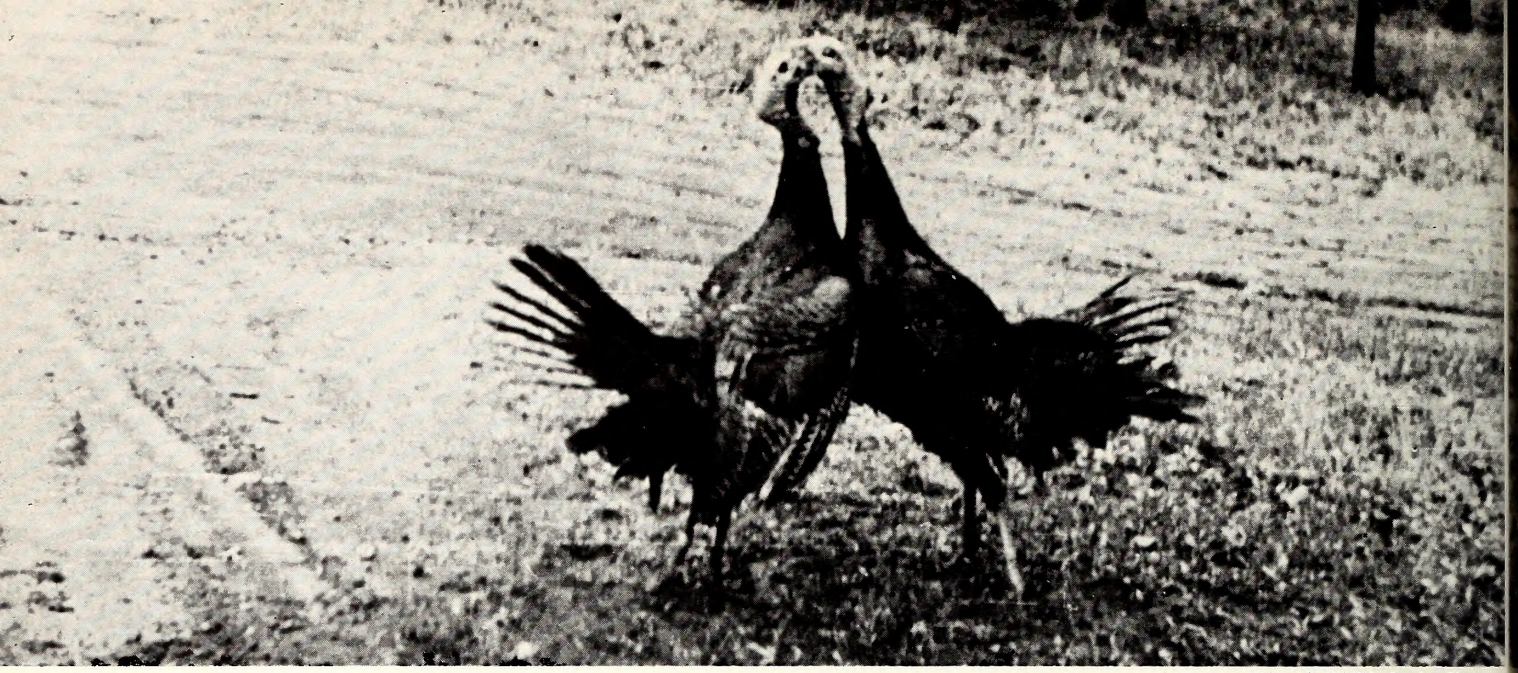


Fish and Wildlife Service Photo

The wild turkey is polygamous; the males strut, display their beards and tail feathers, and even fight to collect a harem. Above two wild gobblers battle during the mating season.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-fourth of a Series on The Wildlife Species of North Carolina

THE WILD TURKEY

By ROD AMUNDSON

FEW institutions are more typically American than the Thanksgiving Day turkey, yet early New England colonists were suprised to find a bird they considered a common European barnyard fowl flying about abundantly in the New World hardwood forests.

The Spanish conquistadors were the first to find out that turkeys made excellent eating. They found old Montezuma raising a domesticated variety of turkey to feed the animals in the royal zoo. The Spaniards took some of these birds back to Spain, and from there they spread throughout Western Europe within a very few years. These same domestic birds found their way back to America with the colonists, and probably were the ancestors of the turkey you ate last Thanksgiving Day.

Many people contend that the wild turkey, not the eagle, should be our national symbol, and there are many factors to support such a contention. Turkeys are wise, majestic, powerful birds, stately and highly respectable; the bald eagle is a noisy eater of carrion, a scavenger and a robber despite its regal bearing and spectacular soaring flight. According to legend, Benjamin Franklin, who was a strong advocate of the turkey as the national emblem, is supposed to have done a little political horse trading and cast the deciding vote in favor of the bald eagle.

Selective breeding has developed several strains of birds from the original wild stock, and occasionally wild turkeys and their domestic relatives become crossed.

No one knows for sure where turkeys got their name. They give voice to a sound which could be interpreted as "turk, turk, turk," but the "gobble, gobble, gobble," of the toms by the same token could have suggested a different name. Several Indian tribes called the birds "furkee." "Turkey" may be a corruption of that name, especially since the birds have wandered from Mexico to Spain to England and back to America again, with accompanying confusion of language.

The original range of the wild turkey extended from the Atlantic coast to the Rocky Mountains, and from Central America to Canada. Wild turkeys do not get along well with civilization, and in the years since this country was settled, they have been forced out of existence until their range is limited to only a few states. North Carolina is one of the

few states in which wild turkeys range in important numbers.

Characteristics

Altogether there are seven varieties of wild turkeys in North America, including the ocellated turkey *(Agrocharis ocellata)* of southern Mexico and Central America, and *Meleagris gallopavo* with its six subspecies in the United States. The species native to North Carolina is *Meleagris gallopavo silvestris,* more commonly called the Eastern wild turkey. Actually, there is very little difference among wild turkeys native to this country other than minor color variations.

The Eastern wild turkey is a beautiful, majestic, symetrical bird. The general color is a coppery bronze with the feathers margined in black. The feathers are highly iridescent, and refract sunlight into beautiful rainbow hues. Females are a duller color than the males. True wild birds may be distinguished from their domestic relatives by the deep chestnut tips of the tail feathers as compared to the white-tipped tail feathers of the domestic birds. The wild species is more slender and more deeply burnished.

Wild turkey heads are devoid of feathers to a point about a third of the way down the neck. The bald skin is bluish around the head proper with red coloration under the chin and down the neck. Wattle-like protuberances on the throat are usually a dull-to-bright blue. Adult males have a characteristic beard which is composed of thin, bristle-like feathers. This may vary in length from a few inches in a young male to a ground-sweeping ornament 14 inches long in a wise old gobbler. This beard is definitely a secondary sex characteristic, and seems to have a way of fascinating hens.

Mature gobblers are about 48 inches long and may weigh as much as 20 pounds, although records of 40-pound forest patriarchs are not rare. Hens are about a foot shorter than gobblers, and weigh correspondingly less.

Wild turkeys are sociable birds—among their kind. This sociability is tied in with a garroulous nature and a vast repertory of clucks and yelps and gobbles and calls. There are warning calls, alarm calls, mating calls, feeding chatter, and just plain gossipy noises. The mating calls of the hen are imitated by turkey hunters, and the degree of skill in imitating such sounds often determines the success or failure of the hunt.

Naturally shy and retiring, the suspicious nature of wild turkeys has become intensified by the encroachment of civilization. They are constantly on the alert, ready to take flight, or more often foot, at the first warning of danger. The eyesight and hearing are extra-ordinarily keen, and many a vigil in the woods has netted a turkey hunter naught because of an uninhibited sneeze or the inadvertant clink of a gun barrel against a stone.

As has been pointed out, turkeys are sociable birds. They go about their daily life in droves or flocks varying in size with the season. During the nesting season, of course, the hens are hidden away in woodland thickets going about the serious business of incubating the eggs. Later, however, broods of young poults may be joined by hens which were unsuccessful in bringing off their own young. In the fall, several families may join together in flocks of several dozens—a thought to quicken the pulse of a turkey hunter. Later in the fall and winter, the sexes tend to seggregate into groups, although this is not an unvarying rule. Several old gobblers may range together until breaking up for the mating season, while other groups may contain a preponderence of hens with a few gobblers tagging along.

Before going into the more intimate details of the life of wild turkeys, something should be said of their remarkable speed on the ground. Wild turkeys, with an incentive to vacate a given locality, can cover the ground afoot at 30 miles per hour in short sprints, and average a good 15 mph. on a longer stint. Sometimes, instead of running away, they take to the air in an upright burst which may carry them to the treetops or into the next township, depending on the whim of the birds. Flights of more than a mile, however, are rare.

Dusk each night finds wild turkeys roosting safely in the trees of their selected roosting area. They will

Even the veteran turkey hunter will be thrilled by the sight of fresh gobbler tracks.

Fish and Wildlife Service Photo

return night after night to the same roost, often having to run madly into the locality to reach it at the usual time. Constant molestation, however, will cause them to seek undisturbed quarters. The usual approach to the roost is a leisurely saunter, with stops for feeding and to survey the surroundings for enemies. They sleep scattered about in the trees, and if disturbed at night, will fly to other trees, thus avoiding enemies on the ground.

Breeding Habits

A discussion of the life cycle of wild turkeys is complicated by the fact that males do not breed until they are two years old, and hens lay eggs during the first year of life. In late winter, the winter flocks of turkeys break up into smaller groups of three to five. In these groups the sexes are separated. the hens in one group and the toms in another.

Pennsylvania Game Commission Photo

Turkey hens must select a well-hidden spot for a nest, for the gobblers will destroy any nest they can find.

Yearling males keep to themselves throughout the mating and nesting season, and in no way enter into the family life.

Once the smaller groups are formed, the breeding males begin the strutting and showing off of beards and tail feathers so characteristic of the species. The strutting is for the sole purpose of attracting hens, and once a hen has chosen a gobbler pleasing to her fancy, his strutting, fluffing of feathers and vocalizing is intensified. To the few people who have observed it, this courtship behavior is entertaining, to say the least. The gobbler inflates his lungs with air. ruffs his feathers, spreads his fantail, pulls his head back to accentuate the breast feathers, and begins to strut around in tight circles, usually with one or both wings spread downward to scrape the ground. When he can no longer hold his lungs full of air, the whole demeanor collapses with a deflationary "shwuff." The process is then repeated, often to attract more hens. Wild turkey gobblers are polygamous, and try to accumulate a harem of as many hens as possible, usually five at the most.

The word "harem" is an apt description of the hens a gobbler may squire about the woods. He keeps them herded together and guards them carefully against the encroachment of eligible bachelors. His entire energy, during the mating season, is devoted to his retinue of wives. He seldom if ever takes time out to search for food, depending on stored body oils in his breast sponge, a sponge-like embellishment of his breast muscles provided by nature for that purpose.

Throughout the mating season, unmated young bachelors go about in constant search for mates, the old, wiser gobblers having acquired the entire supply. It is these youngsters who are lured by the calls of turkey hunters where turkey hunting is allowed in the spring.

Turkey nests are built on the ground in a carefully hidden spot, usually camouflaged by heavy vegetation, woody brush, or the top of a fallen tree. Once the nest has been established, the hen lays one egg per day until a dozen or eighteen have been laid. This is the critical part of the wild turkeys' life cycle. The nest is not only endangered by predators, but by the gobblers themselves. For some reason, perhaps to prolong the period of almost daily mating, gobblers will destroy any nests they can find. Such behavior may be calculated or only instinctive; at any rate it is known that turkey hens will attempt a successful clutch of eggs several times if the first attempts fail. Thus extremely young birds in the hunting season are accounted for. Only one brood is hatched each year. The incubation period is 28 days.

Newly-hatched turkeys are extremely delicate, subject to chilling and soaking from spring showers, and hence pneumonia. Their first days are spent in forest clearing where seeds, berries, and especially insects are plentiful. They grow rapidly, and in two or three weeks are sufficiently grown and plumed to fly into low trees to roost at night.

Food Habits

Almost symbolic of the season which it traditionally represents, the fall of the year is the time of feasting for wild turkeys. Through the spring and summer months their diet has consisted of insects and the salad greens of the forest; but in the fall nuts, fruits, seeds, and berries are ripe. It is then turkeys stuff and fatten themselves for the lean winter months ahead. They feed on acorns, hazelnuts, beechnuts, chestnuts (where they can still be found), beans, peanuts, and other agricultural foods which occur where agriculture has not eliminated turkey range entirely.

As winter approaches food becomes scarcer.

Where climate permits, turkeys scratch in the earth for hibernating insects, and glean the thickets and clearings for remaining seeds and dried berries. Except during severe winters and drastic food shortages, this scanty diet lasts until green shoots and buds emerge during late winter and early spring.

When food is plentiful, turkeys have a normal range of about one or two miles, but the radius increases with the scarcity of food, and the range may extend up to five or six miles.

Management

A bird as shy and wary as the turkey, with its intolerance of encroaching civilization, presents a complicated problem in wildlife management. To let such a toothsome, majestic game bird go by the board would be sheer tragedy. Wherever wild turkeys exist today, considerable time and money are being spent in protecting and increasing them.

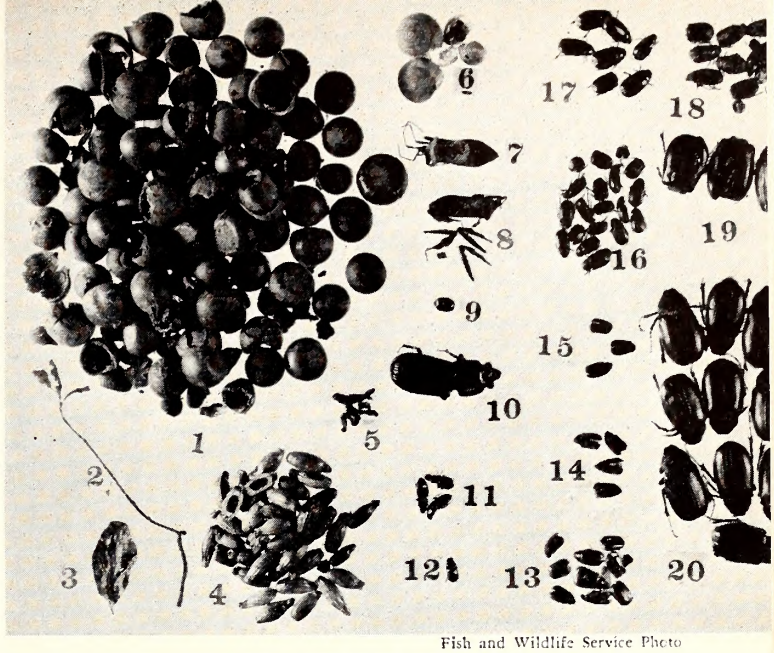
Obviously, stringent rules with regard to hunting turkeys must be enforced. Since they are naturally polygamous, it is possible to harvest off a number of gobblers without endangering the breeding population. Where gobbler hunting is allowed, however, turkey hunters must be extremely cautious to avoid killing a hen, and must often forego a shot at a bird rather than take a chance on killing a hen. Where the gobbler law is in effect, conscientious turkey hunters kill only birds with visible beards. Thus older gobblers are harvested, and vigorous youngsters left to sire more turkeys. Cases of bearded hens occur, but such freaks are not likely to be fertile, and therefore are better off on the dinner table.

Turkeys prefer range of heavy hardwood forests intermingled with small clearings. These clearings are especially important at the time when the young broods are hatched and ready to seek insects and seeds. In North Carolina several projects have been instituted wherein clearings have been made in dense forest areas otherwise suited to turkey production. The effect has been to increase the number of turkeys by providing the ideal clearing-dense woods combination.

Much of North Carolina's turkey range today lies in the Piedmont section where agriculture has encroached into pine-hardwood forests to the extent that clearings are provided, with yet enough undisturbed woodland to be agreeable to turkeys.

Artificial propagation of wild turkeys has been tried many times in many places, nowhere with notable success. Once raised in captivity, wild turkeys simply refuse to revert to the wild state, preferring to accept the bounty of civilization.

During the period when artificial propagation and stocking of wild turkeys was tried in North Carolina, over 10,000 birds were released and about 2,000 eggs distributed to cooperating wild turkey raisers. Apparently these efforts came to naught, because wild turkeys continued to decrease until the so-called "gobbler law" was instituted in 1948.



Fish and Wildlife Service Photo

Twenty items of turkey food. When food is plentiful, turkeys have a normal range of about one or two miles.

Protection served its purpose, especially among hunting clubs along the Roanoke River, where turkeys remained in existence through absolute protection while becoming entirely depleted in surrounding territory.

A number of ingenious ideas have been put into practice to increase wild turkeys artificially. Captive wild hens have been staked out or penned in the woods where wild gobblers can come in to them. This has had some success, but usually the practice has been abandoned for one reason or another. It is easy enough to produce a pure strain of wild turkeys in captivity. The problem lies in getting them to "go native" again.

For a hundred years the complete demise of wild turkeys as we know them today has been predicted. The fact that some remain attests to their alert and wily nature. As industry and agriculture encroach on wilderness areas, the natural range of wild turkeys will decrease, until in the foreseeable future those remaining will live unhampered on government-owned or private preserves.

(Continued on page 23)

A wise old gobbler is perhaps the most difficult of all game birds to bag, and more hunters have failed than have succeeded.

Fish and Wildlife Service Photo

$ THOUSANDS $

IN

PRIZES!

HIGH SCHOOL

RULES → RULES

Wildlife Essay Contest

Sponsored by the
N. C. WILDLIFE FEDERATION
and the
N. C. WILDLIFE RESOURCES COMMISSION

●

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First Grand Prize $100
Second Grand Prize 60
Third Grand Prize 40

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18 District Winners Will Get a Free Trip to the State Meeting of the Wildlife Federation in October.

●

PRIZES IN CASH AND MERCHANDISE FOR 300 COUNTY WINNERS — 1st, 2nd, and 3rd PLACE IN EACH of 100 COUNTIES

●

Thousands of Cash and Merchandise Prizes for 1st, 2nd, and 3rd Best Essay in Each High School in North Carolina

●

ENTER TODAY

See Opposite Page for Rules

CONTEST RULES

The wildlife essay contest is sponsored jointly by the North Carolina Wildlife Federation and the North Carolina Wildlife Resources Commission. All high school students in North Carolina are eligible to participate.

All essays must be written on the subject: "The Value of Wildlife to Me and My Community," and are to be of 1,250 words or less. Other considerations being equal, fewer than 1,250 words will not detract from the value of an essay.

Essays will be judged on the following points:

1. **Neatness**
2. **Subject matter**
3. **Comprehension of subject**
4. **Grammatical construction**
5. **Originality**

The above points are not necessarily listed in order of importance. The decision of various judging committees will be final.

All essays must have the full name, age, grade, school, and county written at the upper left hand corner of the title page.

SCHOOL LEVEL

Each high school having participating students will be considered as a unit. Representatives or committees of local county wildlife clubs will contact officials of the schools concerned, and make arrangements for judging the essays and awarding prizes for the first, second, and third best essays submitted within each school.

COUNTY LEVEL

A committee arranged for by the local wildlife club will judge the two best essays from each school within a county to select county winners of first, second and third place. Prizes will be awarded for the county winners.

DISTRICT LEVEL

A District Committee composed of club members, teachers, and school officials in each of the Wildlife Federation districts will consider the two best essays submitted in each county of the district to determine first, second and third place winners in each district. Valuable prizes will be awarded for these essays, and in addition the contestants winning first and second place in each district will be awarded an expense-paid trip to the annual state meeting of the Wildlife Federation next October.

STATE LEVEL

First and second place essays from the Federation Districts will be submitted to a state-wide judging committee for the purpose of choosing the three best essays in the entire state. Cash awards of $100.00, $60.00 and $40.00 will be given to the winners of first, second and third place, respectively, and the awards will be presented at the annual banquet of the Wildlife Federation during its October meeting.

TIME SCHEDULE

1. Essays must be completed and submitted to the high school judging committee before the close of the school day Thursday, March 1.

2. Winners in each school must be determined by March 10.

3. County winners must be determined by March 20.

4. District winners must be determined by April 1.

5. State-wide winners must be determined by April 10.

Prizes for school, county, and district winners may be awarded on dates determined by the committees concerned. The cash awards for state-wide winners will be made at the annual meeting of the Wildlife Federation.

PRIZES

In the school, county, and district levels, the value and type of prizes will be determined by the prize committees. Prizes may be in cash or in merchandise, and it is anticipated that local business firms will contribute valuable merchandise as prizes.

SUGGESTIONS FOR CONTESTANTS

If the first state-wide essay contest is a success, it will be followed by other contests in years to come. More and more people are becoming interested in wildlife conservation, but no one can give serious thought to wildlife conservation without first becoming aware of its value to each individual and to each community. That is the reason the sponsoring organizations have chosen the title "The Value of Wildlife to Me and My Community."

In writing an essay you might consider two values of wildlife. First its value in increasing the wealth of the state and community as a result of money spent by people who hunt and fish or who simply enjoy being out-of-doors to watch birds and animals. How much money is spent in your community or your county because people hunt and fish? You can find the answer to this question by talking to the business people in your community who supply sporting goods, meals, and all of the things sportsmen spend money for. You can find out whether wildlife is really of money value in your home community.

Besides its money value, wildlife has esthetic value that cannot be measured in dollars and cents. Some people like to go on hikes or picnics—to enjoy the scenery and the wild birds and animals in the woodlands, in the fields and along the streams. Here is where you can use your imagination in an essay—to tell about the esthetic and recreational value.

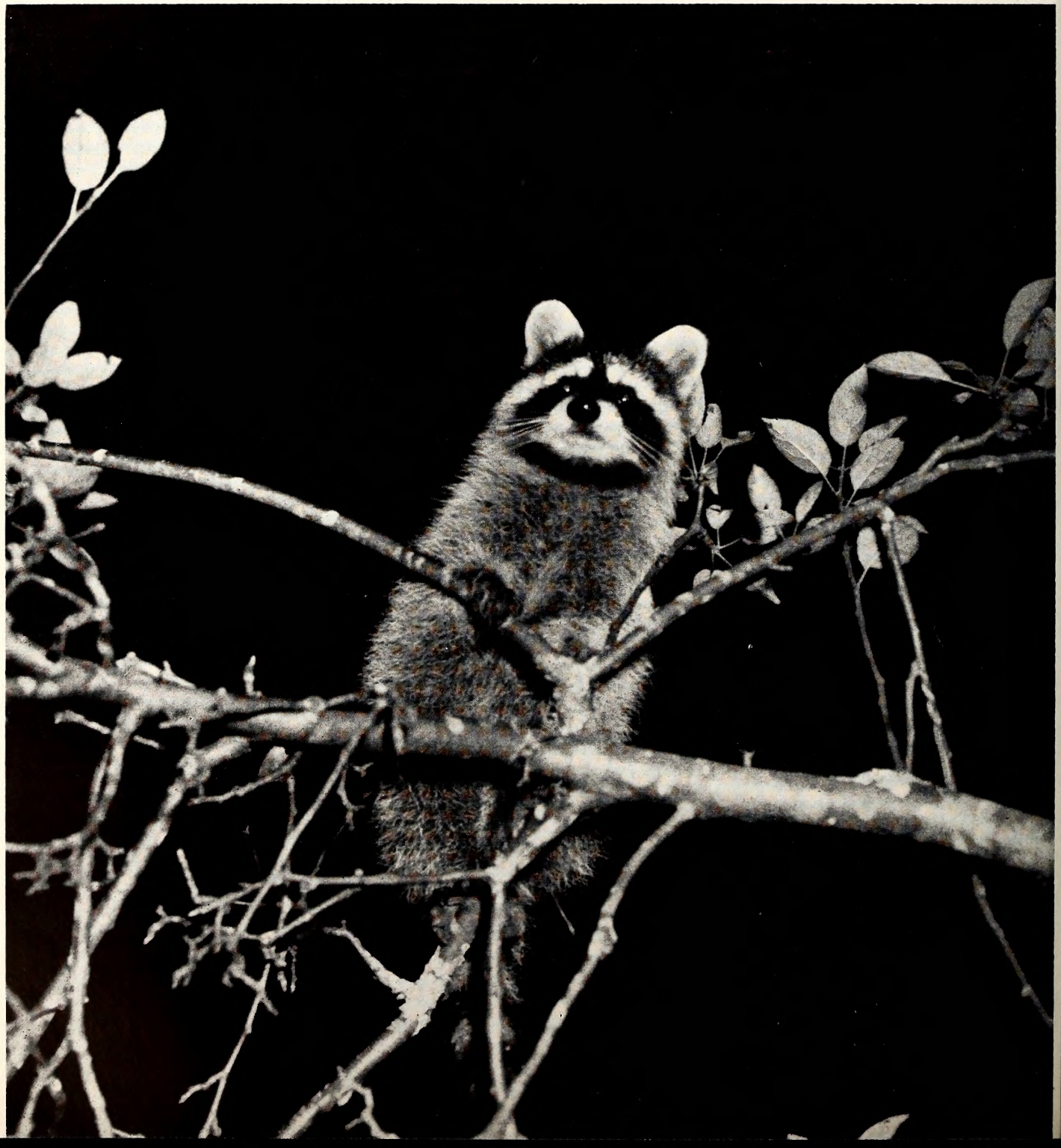
Look around you. Do people get pleasure from seeing a deer or a flock of ducks or geese, or watching a pair of songbirds build a nest? How do *you* feel about wildlife? How is it valuable to you?

Moonlight and Sparkling Frost, Eager Hunters and Hounds — Let's Go On A

Carolina Coon Hunt

By Rod Amundson

Photos By Jack Dermid



THE other night we went out on our first coon hunt. Coon hunting is a combination of an endurance test, a marathon, a wrestling match, and willful, self-inflicted mayhem. But it is fun. Otis Harvey, who runs the Fayetteville Country Club, is one of the doggonedest coon hunters you will ever meet. He runs coons night after night, and will take along anyone who wants to go. In the party the other night were Mr. Harvey, S. A. Whit, and Tim Spence from Lillington, George Elliot of Erwin, J. H. Atkins of Fayetteville, Jack Dermid, who took the accompanying pictures, and this still tired and lame scribe.

The dogs' names should be included too. There wouldn't have been a hunt without Rambler, Red, Red Junior, Belle, Lady, Blue Rock, Black Rock, Buckshot, Jasper, and Jumping Jehosephat. Those were real coon dogs; smart, tireless, and just plumb crazy to get their teeth into a coon.

We turned the dogs loose at about seven thirty. Nine were in Harvey's jeep trailer, and the tenth, Rambler, rode in the back of a pickup truck nicely buttoned into an army fatigue jacket to keep him warm.

The dogs started out quietly enough. They didn't make a peep until they picked up the first coon trail, except that the younger, more inexperienced pups got excited and yowled now and then. It was one of those still, frosty nights when you could hear an eight-hooter for three miles. About ten minutes after the dogs took to the woods the music began. Coon hunters talk about the music their dogs make, and, by golly, it really is music.

The most amazing thing about a coon hunt is the way the hunters can tell exactly where the dogs are and what they are doing by the tempo and pitch of the music they make. Otis Harvey is an expert at reading dog music. Here are some of his typical comments made as the dogs tore through the woods and swamps and thickets:

"That's old Red sounding off. He's on a hot trail. Now you can hear the other dogs coming in with Red. There's Lady. That's old Buckshot hollering now. They got him going. He's still on the ground and running." (This all goes on while the dogs are somewhere out in the woods, in pitch black darkness, half a mile away.)

At this juncture, all the dogs stopped making any noise whatever.

"Hear 'em shut up? That means the old coon has took to water. Now, hear that? That's how they sound in water. The coon's swimming and the dogs are swimming!"

The dogs did sound a little different, like the way kids sound when they are hollering in the swimming pool.

"Now he's out on land again. They're after him again. They got him going up the draw. He's really taking off. Hear that? That's old Rambler. That coon ain't goin' to fool him. Whoops! They got him treed. They got him up a tree. Hear 'em now? They quit baying when the coon trees, and start barkin'. That's old Rambler. He's lookin' that coon to head through the trees. Hear him? He's makin' circles around the tree. Now the coon is moving again. That's Rambler in the lead."

This went on for an hour or two, till finally the coon got in a nice tall hollow tree and stayed there. We bored through about a half mile of brush and brambles to the tree, where the dogs were making a terrific fuss and trying to climb up the side of the tree.

"That's all boys; that's all. Come on!" Harvey was talking to the dogs, and that's all it took to get them all quieted down and away from the tree and off on another race.

Otis Harvey knew the woods we were hunting in like the palm of his hand. But on a pitch dark night in an impenetrable thicket of brush, trees, and briars, even the best of woodsmen can get lost. As we made our way out of the jungle, Otis called for frequent stops to take readings on a compass. As far as the dogs were concerned, they didn't seem to care; they disappeared off in the woods again, their music dwindling away in the distance.

But the dogs didn't have a monopoly on vocalizing. Time after time, throughout the hunt, Otis, or one of the Spences, would let go a long, loud whoop that raised echoes from miles around. We asked why.

"That," said Otis, "lets the dogs know that we are still out with them. It sort of encourages them." We noticed that the dogs increased their noise after one of these whoops.

At one point Harvey, by reading the sounds of the dogs, told us that an old sow coon had got her youngsters up in a den tree and then led the dogs a mile away.

Finally, hours and tortuous miles later, the dogs treed a huge old boar coon, and Atkins, the official gun-bearer, dropped him with a couple of rifle shots. He fell about fifty feet into a waterhole, and was immediately worked over by ten hot, wet, growling dogs.

Harvey doesn't care much about killing a coon except that some of the farmers want to get rid of them, and of course you can't ask a coon dog to run his legs off all night without giving him a chance to get his teeth into a coon, even if the coon is already dead.

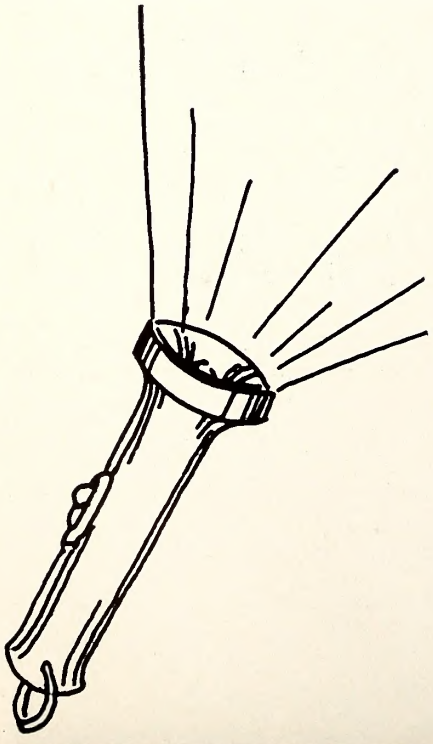
Well, coon hunting is fun. The dogs were tired, we were tired, and our muscles still ache. But we are ready to go out again anytime. Just blow a dog whistle and see!

Two Pages of Photos Follow

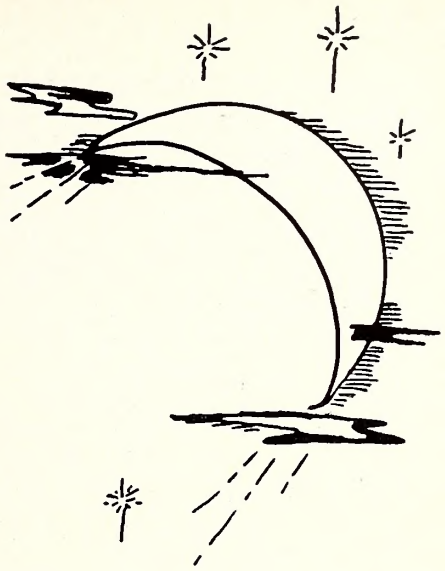
Nine eager coon hounds were in the jeep trailer. Otis H
jumped back fast when the gate was opened, for those
were coming out! The dogs struck a trail soon after
entered the swamp, and the hunters gathered on a h
listen. Dog "music" told the story of the chase.

. . . and a coon was treed. But it was safe in a hollow black gum. The dogs were called off.

Miles of sticky swamp mud and fierce cat briars later, the hou
treed again.



With the battle over and the coon dead, the dogs were separated, but Black Rock demanded one last bite at the water-logged quarry. It was an old boar coon. Little wonder, then, that it lead the hounds for a grueling two hour chase.

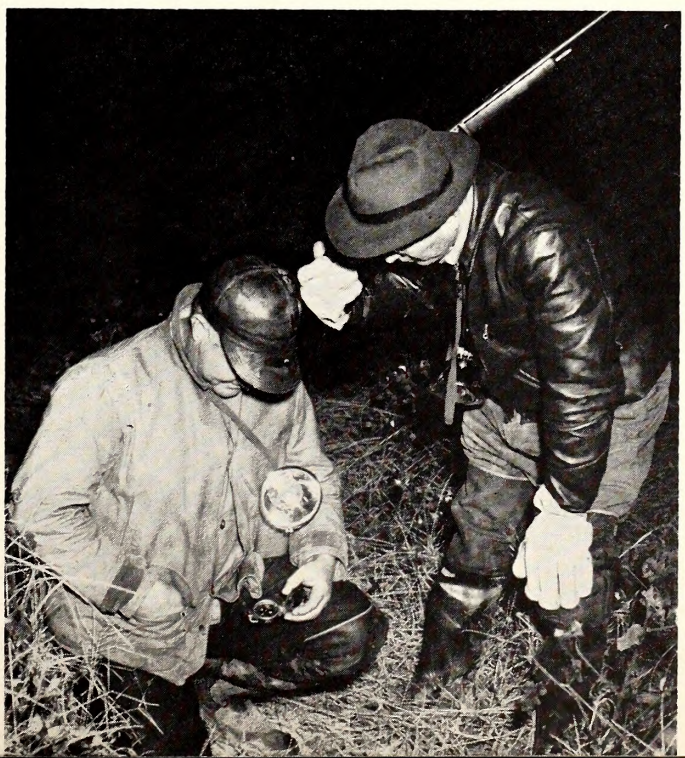


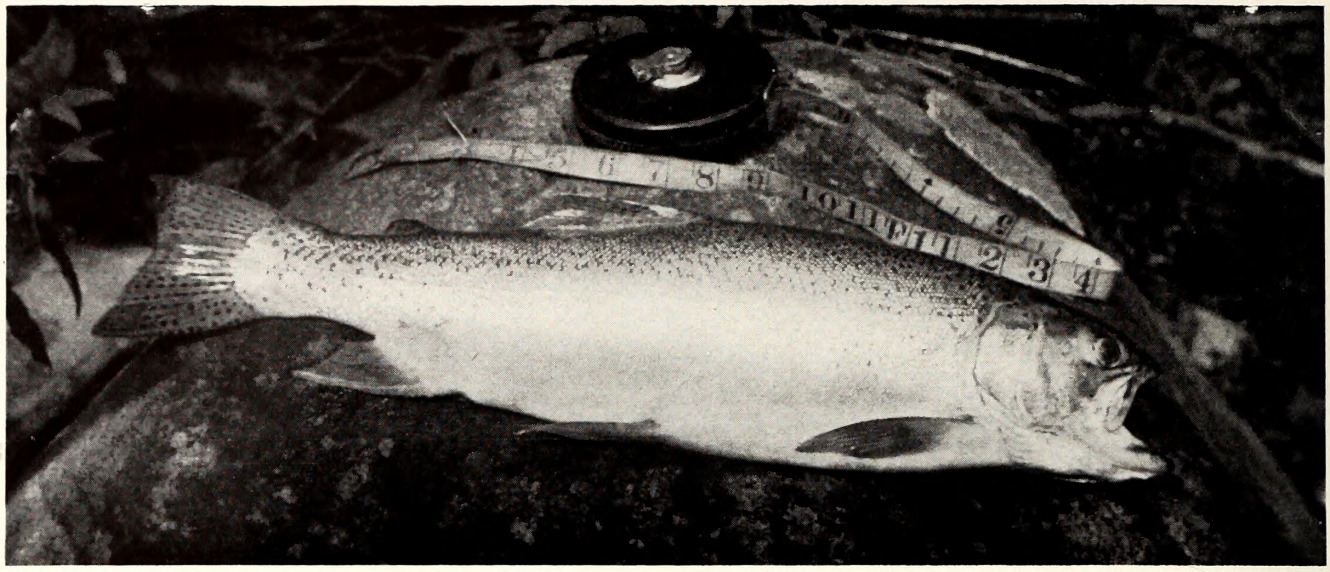
As the tempo of the first race slowed down, the coon hunters felt the nip in the frosty air. Anyway, what's a coon hunt without a fire? It's around the flames and embers that real companionship is experienced. It did not last long, however, for the dogs came closer . . .

t Spence climbed to chase the coon from a snag. It sped to topmost branches, but a shot . . .

. . . sent the coon tumbling to the water below. And only the dogs know what happened in the ensuing furry brawl.

e midnight, the hunters and dogs started for home. Their ired, yet their hearts were light! It had been great sport from the way, the compass was checked often. It's easy to get in the bottomlands.





INLAND FISHING IN NORTH CAROLINA

By J. H. Cornell

Chief, Fish Division

THERE are probably more fishing trips per person among North Carolinians than among the citizens of any other territory of equal size. Fishing has long been recognized as the most important participant sport in the United States. Statistics show that more people go fishing than indulge in any other one form of sport, and North Carolina is no exception to this rule. This is partly due to the fact that North Carolina is fourth among the states of the United States in the amount of inland fishing water available. The only states having more inland waters are Florida, Minnesota, and Texas. In our inland waters of over 2¼ million acres are found a diversity of species which defies comparison. In the western part of the state we find typically northern fishes such as muskellunge and pike-perch, in addition to the brook, rainbow, and brown trout which inhabit some 1,100 miles of streams in the mountain counties. In the foothills there are excellent smallmouth bass streams, and farther east the largemouth bass and sunfish populations provide most of the sport fishing. In the southeast, particularly, is found excellent fishing for crappies, warmouth, perch, and the oversize "copper-nose bream." From the cold waters of Mt. Mitchell, the highest mountain east of the Mississippi, to the warm waters of the Atlantic Coast, the fishermen look for nearly any species in which they may be interested and expect to find it.

The excellence of our fishing facilities across the state is borne out by the fact that over 36,000 nonresident fishing licenses were sold in 1949 to tourists visiting the Old North State. Our waters were visited by well over 200,000 licensed fishermen during the past calendar year. Because North Carolina law provides that a citizen may bait fish in his county of residence without a license, we might conservatively double the number of fishermen indicated by license sales. If each fisherman went fishing on an average of ten times per year, which again is probably very conservative, it would mean that the inland waters of North Carolina support over four million fishing trips per year. The productivity of our waters must be tremendous in order to provide any measure of success for this much fishing pressure.

Surveys

It is one of the aims of the North Carolina Wildlife Resources Commission to provide better fishing for more people. In order to take stock of our fishery resources, an extensive survey program is being conducted to determine some basic information on the fish populations of our major waters, and to learn more about food supplies and habitat conditions under which these fish live. Hayden Ratledge, a fish biologist employed by the Wildlife Resources Commission, is supervising survey work on the trout streams; lake surveys are under the direction of Duane Raver, fish biologist, who has visited prob-

lem areas from the Atlantic Ocean to the Tennessee line. These biologists were assisted by wildlife students from N. C. State College, who were hired for the summer by the Wildlife Resources Commission to assist in this survey work and also to increase their knowledge of wildlife management. As a result of the studies being made, it is possible to determine where stocking is necessary and what management practices may be best employed to improve the quality of our fishing and to provide more bites per hour for the fisherman. This survey work constitutes the foundation on which any overall plan of management must be founded. It provides the basic information on the situation which exists in any piece of water. When that information is available, it is possible to determine what management practices may be expected to improve it.

Stocking

For many years fishermen have been of the opinion that the only way to improve fishing is to put more fish in the water. In some cases this is true, and as a management practice the stocking of fish is an integral part of the Wildlife Resources Commission fishery program. Fortunately, many fishermen are at last coming to realize that the addition of more fish to many bodies of water is extremely undesirable in some circumstances. This might be compared to a pasture which is supporting a maximum number of cattle, but where the food supply is so limited that they are not growing up and getting fat. Under those circumstances no farmer would think of adding additional cattle in order to increase his beef production. In our North Carolina waters, in most of the larger areas where bass and bream fishing are most important, Nature provides for more restocking than all the hatcheries we could build. When it is considered that each pair of spawning bass potentially can produce between two and three thousand additional bass per year, it appears that our greatest problem is not one of additional stocking, but rather one of assisting Nature in permitting the fish to reproduce their kind successfully. There certainly are situations where fishing pressure is so great that additional stocking is necessary and desirable, and to this end the Wildlife Resources Commission maintains six major hatcheries across the state.

Trout are extremely selective in their choice of breeding sites, and the habitat suitable for the natural reproduction of trout is diminished every year by the industrial and organic pollution of streams, and also by extensive lumbering operations which permit the rapid run-off of rainfall, with a constant diminishing of stream size and increased temperatures. These evidences of the demands of civilization make it necessary to conduct extensive stocking operations for trout if the increasing army of trout fishermen is to be satisfied. The Wildlife Resources Commission maintains trout hatcheries so located that they can best serve the trout waters. From north to south through the mountain areas, we have a hatchery at Roaring Gap under the supervision of Leo Roberts; one at Pineola under the supervision of Gwyn Woodruff; one at Marion under the supervision of Luther Skaggs; and one at Waynesville under the supervision of Leo Rieger. Through the conscientious and diligent efforts of these men, the Wildlife Resources Commission has been able to stock well over 100,000 trout 7 inches and upwards in length in the public waters of the state during the trout season which has been concluded. This represents a considerable increase over the number of adult trout liberated in public waters during 1949, and approaches the maximum possible production with our existing facilities. The increase has been made possible, to a considerable extent, by the activities of Maurice Bryant, Trout Production Supervisor, whose progress in improved feeding techniques and control of disease has brought a larger number of fish to maturity.

Because of the diminishing number of suitable spawning areas for trout in our North Carolina streams, a program was inaugurated this past year of rearing trout to fingerling size and stocking them in small headwater streams where they would normally be found at that time in their life history. It is expected that there will be considerable natural loss among these fish, but as they develop in size under natural conditions, many of them will move downstream and provide really wild stream-raised

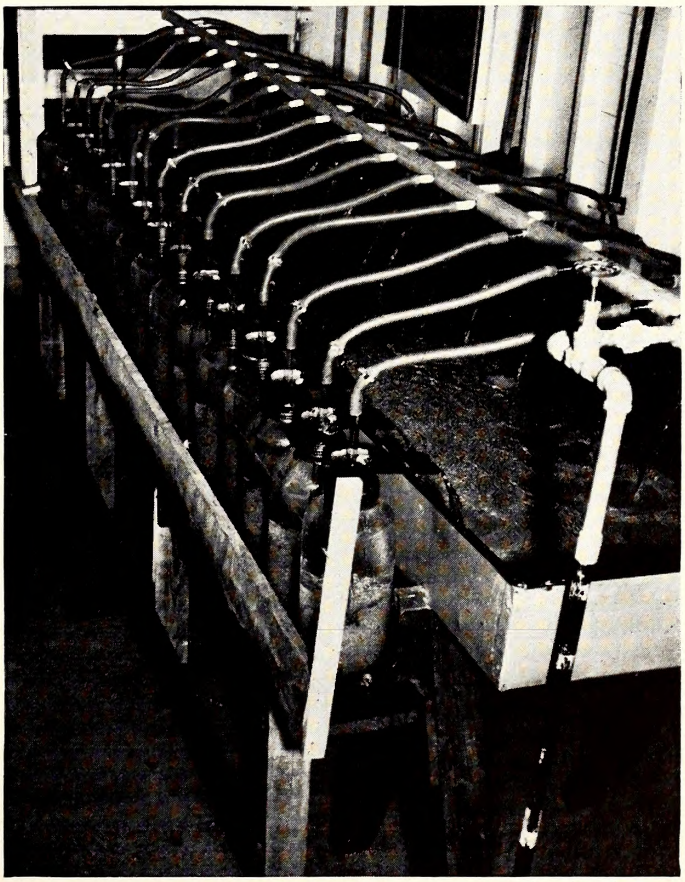


Photo by Win Donat

Five million walleye pike eggs, a gift from New York, have been successfully hatched and distributed in North Carolina.

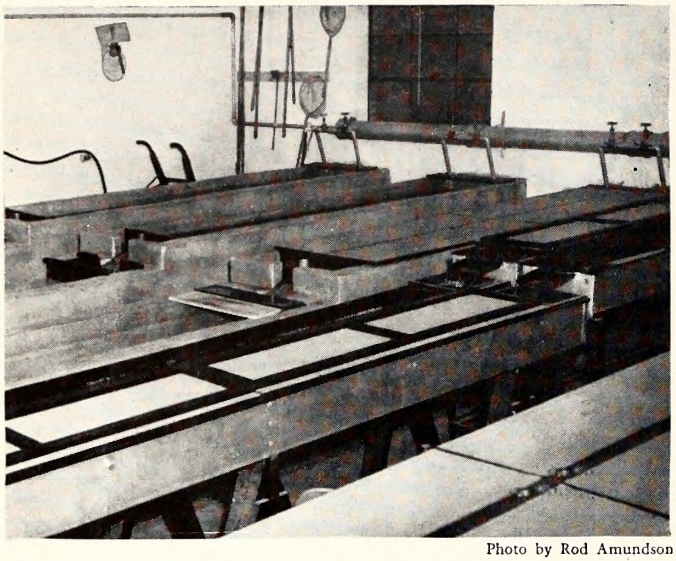


Photo by Rod Amundson

Hatching troughs and rearing tanks for trout at the Marion Hatchery. The stocking of fish where necessary is a sound management practice.

fish for North Carolina sportsmen in future years. There were over 200,000 fingerling trout stocked during the spring of 1950 in carrying out this headwater stocking program. Another hundred thousand fingerlings are being reared by various sportsmen's clubs as a part of their club activities. When these fish reach maturity, they will be stocked by the clubs in the public waters of the state for the benefit of all of our trout fishermen.

Hatcheries for warm-water fish are maintained at Table Rock, near Morganton, under the supervision of George Scruggs, and at Fayetteville under the supervision of Eugene Smathers. During the past year both bass and bluegills were stocked from these hatcheries in every county of North Carolina which has suitable waters. A greatly increased number of bass was made possible by a rearrangement of the program of hatchery operation in order that all available water might be used. In conformity with the announced policy of the Wildlife Resources Commission, all fish raised in any of the state hatcheries have been stocked in public waters where all fishermen may have an equal opportunity to harvest the crop which their license money has made possible.

In the northeast corner of the state, the Wildlife Resources Commission, in cooperation with the Fish and Wildlife Service, maintains a unique hatchery at Weldon. This hatchery is operated during the time of the spawning run of striped bass or rockfish. Because the striped bass is one of the fishes which must come from salt water into fresh water to spawn, it becomes a fish of our inland waters for a brief period of its life. The inland fishing for this species must of necessity be principally for those fish which are on their spawning migration. In order to maintain this population at high levels, interested sportsmen bring freshly caught fish to the hatchery where the eggs are removed and placed in hatching jars to develop. After the eggs have hatched, the fry are distributed to various streams along the east coast where they may return to their native saltwater habitat as they mature. The operation of this hatchery during the past year was relatively unsuccessful compared to the several preceding seasons. An unusually large spawning run developed in the Roanoke River, but they were so successfully harvested by the nets of commercial fishermen that comparatively few reached their spawning grounds in the upper Roanoke. It is hoped that in future years provision will be made for an adequate spawning population to avoid the commercial nets so that this important and desirable species shall not be entirely lost to North Carolina waters.

Operation Walleye

In order to improve the fishing in some waters of North Carolina, particularly power reservoirs, a major effort has been made during the past year to introduce the walleyed pike or pike-perch. Because largemouth bass must build nests in order to spawn, their numbers have been kept at a minimum in the major impoundments of the state because of the water level fluctuations incident to power production. Suddenly reduced water levels during the spawning seasons expose the bass nests to the air, with the resultant loss of thousands of potential fish. It is believed that the walleye will be able to reproduce successfully under these circumstances, and will provide a most welcome addition to the fish fauna of North Carolina. The Wildlife Resources Commission obtained 5,000,000 walleye eggs as a generous gift from the State of New York, as a basis for this attempt to introduce the species on a major scale. This large shipment of eggs was flown to Raleigh by commercial airlines, transported from there to the State Fish Hatchery at Table Rock, and were successfully hatched and distributed from that point. The Fish and Wildlife Service cooperated by providing hatching equipment for these eggs, and the success of the hatching program was largely due to the diligence and effort of George Scruggs, Hatchery Superintendent. A hatch of over 80 per cent was obtained, and 4,000,000 walleye fingerlings were liberated in North Carolina waters. In order to determine the type of habitat which they might find most suitable, three type lakes were selected for stocking: 1,000,000 fry were planted in Chatuge Reservoir, a high, cold lake with extremely extensive drawdowns; 2,000,000 were planted in Lake James, which is relatively large and clear but with a more consistent water level; 1,000,000 were planted in High Rock Lake, which is comparatively shallow and much warmer than the other two. If any of these plantings becomes successfully established, additional fish will be available for a further expansion of the establishment of this species. An additional reason for the selection of Lake James and High Rock is that each of these is the head-

waters lake of a chain of reservoirs extending across the state. If either or both stockings become established, their offspring will move downstream through the chain of reservoirs so far as the habitat is suitable for the species. In this way we can expect to stock the complete Yadkin and Catawba chains by the normal movement of the fish and without further physical transportation.

The walleyed pike is a comparatively cold-water fish, but has been known to do well in some situations where cold water is not available. Because it prefers colder water than the bass, it is usually found at greater depths, and should not compete seriously with the bass for food. It is expected that these fish will serve to compliment the bass population rather than compete with it. As the fishermen of North Carolina will find, it is a worthy antagonist on the end of a fishing line, and also the epicure's delight in the frying pan.

Farm Ponds

The Soil Conservation Service reports that they have assisted in building 4,677 farm ponds in the State of North Carolina. This, they estimate, is approximately 80 per cent of the typical farm ponds, ranging from one-half to five acres, within the limits of the state. Their interest in farm ponds is a matter of soil and water conservation. However, they recognize the fact that farm ponds provide a suitable habitat for a fish crop for the farmers, and consequently they supervise the stocking of these ponds with fish from the hatcheries of the Fish and Wildlife Service. Once these ponds have become established, they represent a valuable addition to the inland waters of the state, and provide some of the best bass and bream fishing to be found anywhere. The management of these waters becomes an additional problem of the Wildlife Resources Commission. William Ellis, fish biologist, has been employed to devote a major portion of his time and effort to giving help to pond owners in maintaining their ponds at a high productive level. Plans are under way for further cooperation with the Soil Conservation Service and the pond owners of North Carolina to provide still more assistance in the management of this valuable resource. It is the plan of G. A. Jones, Chief of the Law Enforcement Division of the Wildlife Resources Commission, to conduct an extended educational program for his Wildlife Protectors, with the aim of providing them with adequate information to be of assistance in game and fish management practices. It is hoped that in the near future these men will be able to render valuable assistance to the owners of private ponds in suggesting desirable management practices.

Conservation

A noteworthy step forward in the progress of conservation has recently occurred in the fisheries field. The North Carolina Wildlife Resources Commission has issued the first license for the commercial operation of a minnow hatchery where bait minnows will be propagated and sold. It has been the custom for years to seine minnows from the public waters for sale as bait. This practice is definitely in opposition to good conservation because minnows in the natural waters constitute the normal food for the game species, and the continuation of large game fish populations depends on their presence. Commercial propagation of minnows in private ponds is to be commended and encouraged as a most desirable conservation practice. While the licensing of the first commercial minnow hatchery is probably not a history-making event in itself, it does indicate that the people of North Carolina are coming to realize that nature must be assisted if we are to keep our fish crops increasing in proportion to the increased number of fishermen.

The interest of North Carolina sportsmen in conservation is indicated by the number of sportsmen's clubs across the state whose very existence is the best indication of the interest of the people in the conservation and wise use of our fish and game resources. These organized clubs have rendered great assistance in carrying out the fisheries program of the Wildlife Resources Commission, and have frequently given of their own time and effort to make a success of various phases of the fisheries program. The twenty employees of the Fish Division are charged with the responsibility of serving the needs of approximately four million citizens of North Carolina and of improving the fishing in the state, which ranks fourth in the Nation in the amount of inland waters. It is apparent that only by the continued interest and assistance of the sportsmen of the state and of their clubs can the Wildlife Resources Commission possibly continue to render the services which are expected and necessary in carrying out its aim of "More sport for more people, equal opportunity for all."

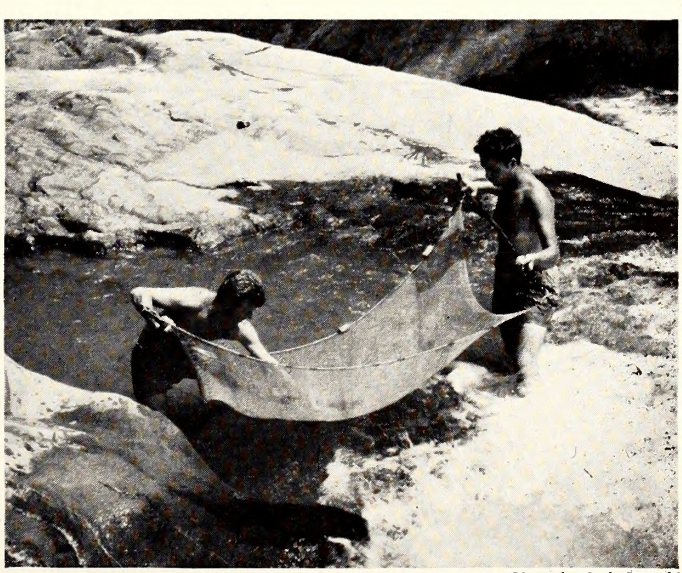


Photo by Jack Dermid

Water surveys are an important part of the fishery program. Here biologists seine a stream to determine what fish are present.

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

AT PRESS TIME IT APPEARED THAT DESPITE WARTIME PAPER SCARCITY AND A BACKLOG OF PRINTING ORDERS, THE 1951 FISHING REGULATIONS WOULD BE DISTRIBUTED AND IN THE HANDS OF FISHING LICENSE DEALERS BY THE TIME THE 1951 FISHING LICENSES WENT ON SALE JANUARY 1.

ONLY MINOR CHANGES WERE MADE IN THE 1951 FISHING REGULATIONS OVER THOSE IN EFFECT LAST YEAR. CREEL LIMITS ON BLUEGILLS (BREAM), REDBREAST, YELLOW PERCH, WHITE PERCH, CRAPPIES, AND OTHER SUNFISH WERE RAISED FROM 15 PER DAY TO 20 PER DAY. THE CREEL LIMIT ON ROCKFISH WAS RAISED FROM EIGHT TO FIFTEEN IN INLAND WATERS. AND THE LIMIT ON ROCK BASS (RED-EYE) REMAINED AT TEN PER DAY.

A STATEWIDE ORGANIZATION CALLED "CHAMPIONSHIP FIELD TRIALS ASSOCIATION OF THE N. C. WILDLIFE FEDERATION" HAS BEEN FORMED TO PROMOTE BIRD DOG, COON HOUND, FOX HOUND, AND BEAGLE TRIALS. A STEERING COMMITTEE HAS BEEN APPOINTED TO SET UP BASIC RULES FOR CONDUCTING STATE CHAMPIONSHIP TRIALS AND TO PROCURE VALUABLE TROPHIES FOR THE VARIOUS TYPES OF FIELD TRIALS. SUBCOMMITTEES WILL WORK ON AN OPERATIONAL LEVEL TO PROMOTE TRIALS THROUGHOUT THE STATE FOR CHAMPIONSHIP COMPETITION. THERE ARE A NUMBER OF ORGANIZATIONS WHICH CONDUCT AMATEUR TRIALS OF VARIOUS TYPES IN NORTH CAROLINA. BUT UNTIL THE PRESENT THEY HAD NOT WORKED UNDER A STATEWIDE ORGANIZATION.

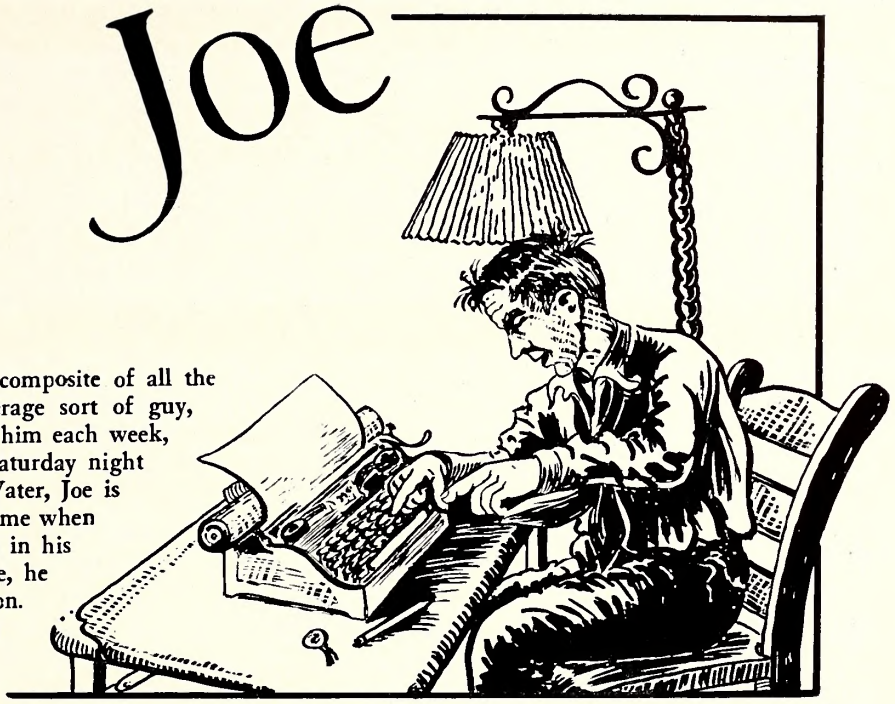
AT THE SANDHILLS WILDLIFE MANAGEMENT AREA NEAR HOFFMAN, THE WILDLIFE COMMISSION HAS SET UP A WILDLIFE DEMONSTRATION AREA IN THE FORM OF SIX THREE-MILE ONE-HOUR FIELD TRIAL COURSES. A 22-HORSE STABLE HAS BEEN COMPLETED, AND WORK IS UNDER WAY CONVERTING THE OLD GAME FARM INTO DOG KENNELS WITH CONCRETE AND WIRE DOG RUNS. FACILITIES ARE TO BE SET UP FOR COON TRIAL COURSES, AND BEAGLE AND FOX HOUND TRIALS ARE A POSSIBILITY ON THE AREA. THE BIRD DOG TRIAL COURSES HAVE BEEN CLEARED OF BRUSH 200 TO 400 YARDS ALONG THE 18 MILES OF COURSE. AND FOOD PATCHES HAVE BEEN PLANTED TO INCREASE SMALL GAME.

THE SANDHILLS FIELD TRIAL COURSES WILL BE THE SCENE OF THE FIRST TAR HEEL CHAMPIONSHIP TRIALS SOMETIME IN FEBRUARY OR MARCH, AND OTHER TRIALS WILL FOLLOW. PERSONS INTERESTED IN STATE CHAMPIONSHIP FIELD TRIALS ARE URGED TO CONTACT THE FIELD TRIAL COMMITTEE. BOX 2919. RALEIGH.

THE STEERING COMMITTEE WILL HOLD ITS NEXT MEETING IN RALEIGH AT NOON ON JANUARY 10 TO DISCUSS FURTHER PLANS FOR THE FIELD TRIAL ORGANIZATION.

AGAIN WATERFOWL AND DOVE HUNTERS ARE URGED TO TURN IN BANDS FOUND ON THE LEGS OF BIRDS. BANDS SHOULD BE STRAIGHTENED OUT AND PASTED TO A CARD OR PAPER GIVING THE SPECIES OF BIRD. THE DATE AND LOCATION WHERE THE BIRD WAS KILLED. SEND THE BAND AND THE INFORMATION TO THE U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C.

Dear Joe



Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Just an average sort of guy, whose wife takes his pay check away from him each week, lets him have a session with the boys on Saturday night and has learned that come Hail or High Water, Joe is going to go hunting or fishing most of the time when he is not working. The questions that arise in his mind about North Carolina's fish and game, he asks of the Wildlife Resources Commission. These letters are our answers to Joe. He's a nice guy and we like him. He's the guy we work for.

Dear Joe,

No, Joe, not until next spring! There is no sense putting fertilizer in your farm pond in the winter. You are right that the reason for fertilizing it is to grow bigger fish faster; but if you will stop and think for a minute, you will remember that when you were a kid on the farm down in Gaston County, you didn't fertilize corn in February. After all, fertilizer does not feed fish directly like a bone for old Mike. It's more complicated than that. All fertilizer can do is to grow plants—and that's exactly why you put it in your fish pond—to grow plants.

They are little plants, Joe. So little you can't see them. But they are real plants, all right, and they are green just like any others. That's what makes the water look green sometimes. A "pea-soup" green is what you want in your pond next spring when the little fish come along. There are little animals in the pond, too, which you probably have never seen because they are so small; but they eat the little plants—and the more plants you raise, the more animals there are.

Then there are larger animals to eat the little ones. They are first cousins to the ones we saw that day last spring when we were trout fishing up on Slick Rock Creek and turned the stones over to see what the trout were feeding on. You remember them—the larvae of Mayflies and Dragonflies and Midge flies. Your pond has animals like them, and they are the food supply for the Bream and little Bass. Then the big bass eat the little fish, and that concludes the "food chain" that started out with fertilizer in your pond.

When should you start fertilizing your pond? Darn if I know, Joe! You tell me if we're going to have a late spring and what the temperature will be on March twentieth. The easiest way to tell is to look at your lawn early next spring and see when it starts to get green. It will be about the time Mary gets that business-like look in her eye and reminds you to have the lawn mower sharpened—and that this year she wants you to mow the grass instead of fishing every Saturday. It will be about the time you get that urge to look over your trout flies and see what new ones you need to tie up before the season opens. When things start to turn green in the spring, that's the time to start fertilizing the pond.

Put in a hundred pounds to the acre. That means two hundred pounds for your two acre pond each time you do it. All you have to do is walk around the shore line and toss it out on the water as far as you can with a tin can or a scoop of some sort. Spread it all around the shore line and don't get too much in one place—but don't worry about the middle because the wind will mix it up all over the pond.

No, Joe. Not just any kind of fertilizer. The scientific boys have tried lots of kinds, and they have found that an 8-8-4 mixture is best for the plants you want to grow. If you can't find that mixture. you can always get the old 6-8-4 standby and add an extra ten pounds of Nitrate of Soda to each 100 pounds of 6-8-4. That would give you the same thing.

Sure, barnyard manure is good—but not "just as good." It does not give as good results in a pond as commercial fertilizer. Beside, the barnyard manure should be put on the fields to help improve the texture of the soil. Better stick to the 8-8-4 for your fish pond.

Now for your question about how often to fertilize the pond. That's another one that cannot be answered directly, because it all depends on how "rich" your pond is now. It's just like a field, Joe.

Some will grow corn with only a little fertilizer—or none; but others will require a lot to get the same results. You should give it a dose of fertilizer every ten days until the water gets good and green. How green is that? So green that you cannot see through a foot of it. A good way to tell is to take the end out of a can of peas, or whatever Mary has for dinner, and tack it on the end of a stick. Make a mark a foot up the stick, and there's your measure. Put it in the water up to the mark, and if you can see the lid on the end, the pond needs more fertilizer. It may take several doses of fertilizer in the spring to make the water so green that you can't see the lid, but once that good green color is established, it does not take so much fertilizer to maintain it. Every time the color begins to fade out to the point where you can see the lid on the end of the stick, it is time for another dose. You should try to keep the water green like that up into October, or until the grass and the tree leaves turn brown in the fall. Then stop fertilizing the pond until the next spring.

Your original question was how to fertilize your fish pond, and why it should be done. Well, that's about the story, Joe. If you follow these instructions faithfully, you will be carrying out the recommendations which the Soil Conservation Service had in mind when they helped you build your pond. There is no doubt that you can grow bigger fish in a short time by fertilizing your pond. There is another benefit to your pond which results from adequate fertilization. too. By developing this growth of little plants which are so small that you need a microscope to see one, and by getting so many of them that you can't see through a foot of water, you prevent the sunlight from reaching the bottom of the pond. This keeps your pond from growing up full of weeds. All plants have to have light in order to grow; and by keeping the water as green as it should be, you will prevent your pond from filling up with "moss" and "grass" which interfere with fishing.

There is just one thing I want to warn you about, Joe. Once you start to fertilize your pond—DON'T STOP! The fertilizer is plant food. If you put in enough to get the green color you want, that's good! But if you start to fertilize your pond in the spring and then forget about it, or if you do not put in enough fertilizer to get that dense green color which shades out the weeds, then the weeds will use up the plant food you have put in, and they will grow more densely and bigger than ever before. This fertilizing job is one which you dare not do half-way! Unless you are going to put in enough to get the results you want, it is better not to put any in the pond. You can depend on it that partial fertilizing of your pond will only result in a pond full of weeds, and fishing will be worse instead of better.

And all this talk about fertilizing your pond reminds me of something else that is important. Remember that you are going to raise more fish and raise them faster by increasing the food supply. This means that you will have to catch more than you ever did before. It is important to take out all you can catch so that the others will have food and space to grow up. To get best results you will need to fish the daylights out of it—and call in your friends to help. But this gets into a discussion of pond populations, and this letter is too long already. I'll write to you again and tell you a little about who eats what and the relationships between the various species and size groups. That's a long story in itself.

So long for today, Joe. Keep 'em in a line, and just yell when you need help. We'll try to be "Johnny-on-the-Spot." Be sure to bring Mary and the kids to see us next time you are in town.

Best wishes,
Harry Cornell

P.S. Your letter just came in about the gripe that is being raised by some of the members of your Wildlife Club. We'll give you the straight dope on that next time, too.—JHC

What Is the Future of Hunting?

SETH GORDON, noted consultant to the California Wildlife Conservation Board and former director of the Pennsylvania Game Commission, reported recently on a survey of North American state and provincial wildlife agencies to the 40th annual convention of the International Association of Game, Fish and Conservation Commissioners. The results are of direct concern to every sportsman in America, the Wildlife Management Institute believes, because the sportsmen are the people who should take the lead in demanding that the reported deficiencies be corrected.

Under the broad subject, "The Future of Hunting and Fishing in America," Mr. Gordon reported some rather startling facts.

With hunting pressure at all-time high, only 13 of 54 states and provinces have laws which prohibit shooting close to residences and other buildings. Those states which have laws giving landowners this logical protection are, in general, those in which land posting has been materially retarded. Only 11 report that their conservation laws contain adequate punishment for those responsible for injury or destruction to private property. Only 14 states and provinces of 54 have features in their conservation laws which operate against "trigger-happy fools" who have little regard for human life. Only 21 have laws against carrying loaded weapons in automobiles. Only five states and provinces give their field officers the right to seize licenses when violators are apprehended. In 17, the administrative agency does

(Continued on page 23)

BACK-YARD CONSERVATION

By BILL HAMNETT

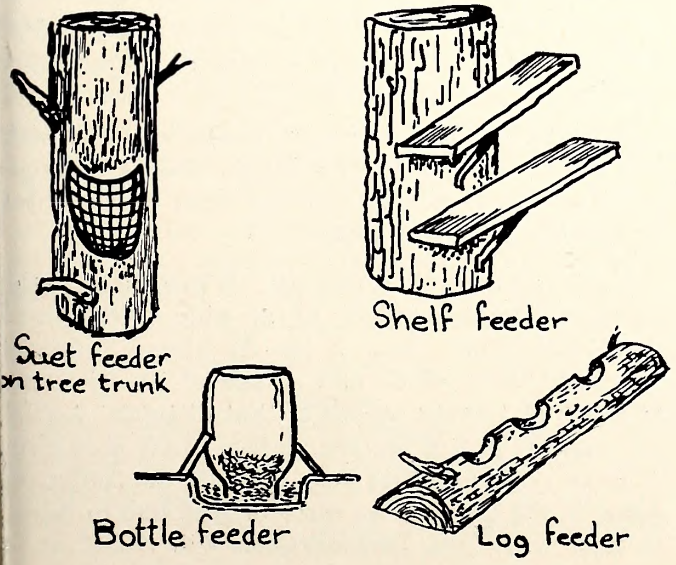
Wildlife Education Representative

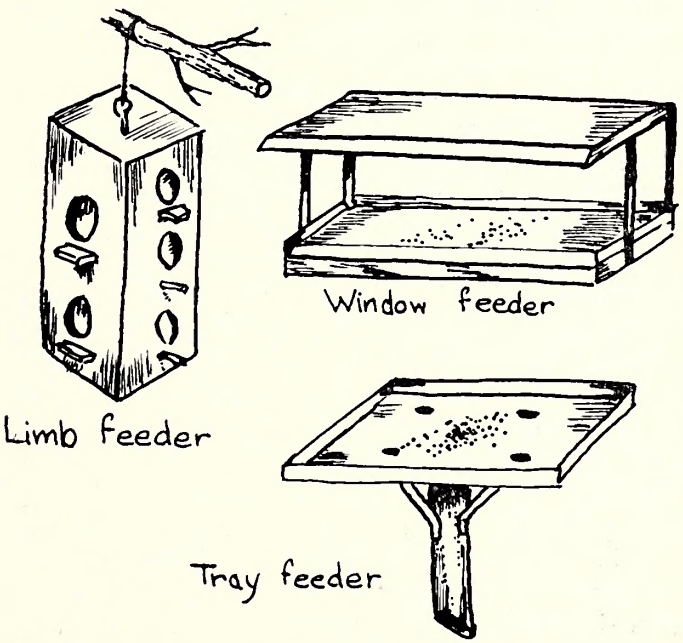
Beginning with this issue we are starting a series on "back-yard conservation." As the name implies, it is going to be devoted each month to simple applications that each family can do around the home and by these efforts we feel much pleasure will be derived. In following through the series each family will bring closer home a better understanding and familiarity with birds and animals in their community.

Winter Bird Feeders
Project No. 1

SINCE we are beginning with the winter season, the first back-yard project is to be a bird feeding station. This is a very easy project to begin with especially for the amount of good it will accomplish. It is during the hard, cold weeks of the year that some birds find it difficult to obtain an adequate amount of food. But by supplementing the availability of food through feeding stations we render a conservation service to our feathered friends.

Bird feeding stations can be designed several ways—the type of construction depending upon the ability and interest of the builder. Feeders may be simple or elaborate in structure but either serve the same purpose. Some suggestions are illustrated to give you an opportunity to choose the style you would like. But, choose one. These can be built in the back-yard at home using suitable scrap material.





One thing must be remembered at all times. Once you start putting out food on the feeder always keep a supply of food available until there again is sufficient native food for the birds. Small grain, such as, wheat, oats, rye, and barley, singly or as a mixture, is good for the seed-eating birds like cardinals and sparrows. Cracked corn is good for the birds too, it is probably less expensive, but not used too much if something else is available. Sorghum and millet seeds are taken by many winter birds. One of the most popular foods is sunflower seed. This is eaten by a great many birds and in preference to other foods when a choice is available. And birds have a party on cake crumbs and peanut butter. Some birds prefer a meat food. Woodpeckers, wrens, and mockingbirds like beef suet and in most instances this food should be put in a special enclosure or the birds will carry it off in a short time.

Safeguard your feeder by placing it where you can enjoy it most and out of reach of cats and dogs. Try this project and see for yourself how friendly you and your neighbors, the birds, will become.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

A recent survey of state game administrators by an administrator of national reputation asked, "What about the future of hunting and fishing in North America?" The fact that forty-four of fifty-nine conservation chiefs replied that they believed good hunting and fishing can be provided despite increased hunting and fishing pressures and an increasing demand for more crop acreage, seemed to indicate the purest sort of optimism. Is it optimism, or wishful thinking? Not by a jugfull IF those who read these words will stop long enough to think of the chances to help the game program that were missed during the season now coming to a close. In *our* hands rests the answer to the future of our hunting and fishing! There is no use complaining that the program is at fault if we do not test it. It is futile to cuss certain regulations because they cramp our style—yet if the truth were known it is quite probable that most of the lack of cooperation with game programs is based on just such facts and not faulty programs.

No, the answers given by the conservation chiefs were not pure optimism, they considered the fact that sportsmanship, as they see it, is a living, dynamic, agressive thing. They hold that anything prized highly by a great number of people, is worth working or even fighting for. This adds up to one thing and that is the *importance of our own individual thought and acts*. We alone can decide whether or not we are going to keep our dogs from self-hunting this spring during the breeding season of game; or whether or not we are going to participate in a habitat improvement program, a school program or support a wildlife club and its activities. There may be much "preaching" in the expression of these thoughts, just as there may be much optimism in the replies of the administrators mentioned above, but this fact still remains, the choice is ours. Let's think straight, act straight then shoot straight during 1951!—WD

Mr. R. C. E. of Salisbury, N. C., writes as follows:

"We have noticed that every bass we have caught in local waters lately has large quantities of roe. Is it customary for bass to have quantities of roe this time of year? Does a bass have the ability to retain this roe until warm weather in the spring to spawn, or is there continued growth with a possibility of spawning in cold weather—December and January?

"All of my fishing friends think it is unusual for bass to have large quantities of roe this time of year. If you can enlighten us, we will thank you."

In fish, reproduction is directly related to water temperatures. This is particularly true of the black bass. The development of a new crop of eggs for the next spawning season begins immediately after the discharge of the eggs which have been maturing during the preceding year. Because of this, it is possible to find female fish soon after they have spawned which give the appearance of being ready to spawn, likewise, fish caught during the winter months also appear ready to spawn. However, actual spawning will not take place until a favorable water temperature is reached and suitable nesting conditions are found. Bass have been known to forego spawning when water temperatures were suitable if adequate nesting conditions were absent.

Mr. R. B. McL. of Goldsboro, N. C. asks a question which has been in the minds of several shotgun shooters, which goes as follows, "What effect does a ninety degree cross wind have on a shot charge at forty yards?"

First, the answer is "plenty." While the question does not give the velocity of the wind, a thirty-mile wind will drive a load of No. 2's fifteen inches off course in forty yards and a load of 6's will stray as much as twenty inches at that distance! Assuming that the gun is patterning in a thirty inch circle at forty yards and that most of us do not center our game in the pattern, an error of lead due to failure to take wind into consideration will result in in

evitable misses. I have seen ducks hovering with no forward motion ten feet high over decoys in the face of a howling sleet storm missed cleanly because the gunner shot point blank. Actually the birds should have been lead as though they were traveling forward as fast as the wind was blowing. Of course, if they were moving downwind, the lead in all probability would need to be more than doubled.

Mr. W. L. H. of Raleigh, N. C. writes, "Several of us have been discussing the ability of bats to avoid obstacles in their path while in flight. Someone said that this ability was due to the fact that a bat works on the same principle as radar. Is this true?"

The idea is partly correct as experiments with bats show that these creatures emit sounds which are reflected from obstacles in time for the bat to dodge. If the bat flies at a rate of forty miles per hour it travels almost fifty-nine feet per second, while sound at sea level travels about 1,170 feet per second. For the purposes the bat uses sound, there is plenty of time for the creature to change a direction. Here the similarity between the bat and radar ceases to exist as radar uses an electronic impulse which is projected and reflected from objects in its path.

Another interesting letter from our friend, Mr. Burton H. Smith, Charlotte, N. C.:

"I have run into something which may be of interest to use in your magazine.

"I have quite a few wild strain mallard ducks and have been very much interested in their behavior.

"I did not know that this type of duck was supposed to get in the notion of a family until the late spring or early summer. However, mine seem to have gone crazy with the warm weather we have had.

"Two hens have already hatched out their broods of young ones, with another setting and several more laying all over the place.

"As I have never heard of ducks doing this so early in the year, I thought it might be of some interest and that you could let me know if you have ever heard of them doing this."

Here again is one of those "things" as it is generally supposed that wild birds do not bring off broods until the assurance of prolonged suitable weather will bring an adequate natural food supply. It may be that Mr. Smith's birds have complete faith in his ability to furnish food and a spell of warm weather was the only other inducement needed. At any rate, it is a most unusual thing for any birds in our climate to be raising young at this time of year.

(Continued from page 7)

Enemies

Being gallinaceous birds, closely related to barnyard chickens and other ground-dwelling fowl, wild turkeys are susceptible to a variety of poultry diseases and parasites. In good, natural range, however, serious outbreaks of disease are uncommon, and healthy birds are inflicted with no more than the usually run of mites, ticks, and lice.

The gun, the axe, and the plow will continue to take their toll; in addition to these are predatory birds and animals. Because turkeys are alert and wary, they have little trouble from most predators during adulthood, but the ground nests are vulnerable to everything from thoughtless small boys to hunting dogs, foxes, crows, and even turkey gobblers.

The weather, too, is a definite limiting factor. Severe winters may result in starvation. Spring rains may inundate nests or soak young poults into a fatal seige of pneumonia.

Considering all of the forces of man and nature which work to the downfall of wild turkeys, it is astonishing that they remain in their present number.

Hunting

Millions of words have been written on the fine art of wild turkey hunting. It is perhaps the most exacting sport in the field of hunting. The turkey hunter, other than the lucky fellow who blunders by accident within gunshot of a drove of turkeys, must know his game; its habits, its way of life, perhaps even its very thought. He must cope with superlative hearing and eyesight. He must be able to camouflage himself to perfection and sit soundless and motionless for hours on the chance that a bird or a flock will come close to his blind. With infinite patience he must learn to imitate the mating call, then with steel nerve, refrain from repeating the call too often or from letting his trembling fingers and tightened jaw muscles distort the sound and frighten his quarry away.

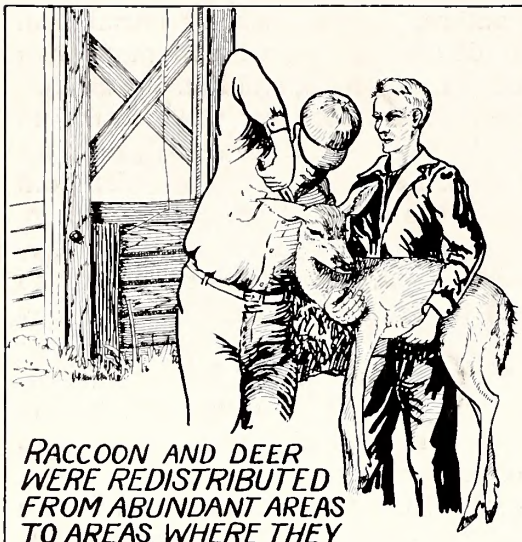
To the nature lover and the true turkey hunter, it is perhaps a consoling thought that to hunt turkeys successfully, you've got to outsmart the turkey. Very few people can fool a wise old gobbler.

(Continued from page 20)

not have the power to deny further hunting privileges to convicted violators; in 13, even the courts hearing the case do not have the right. When such situations exist and where courts deal lightly with fish and game violators, as many do, it is not difficult to find part of the cause for lawlessness among some elements afield and for a wave of land posting on the part of landowners.

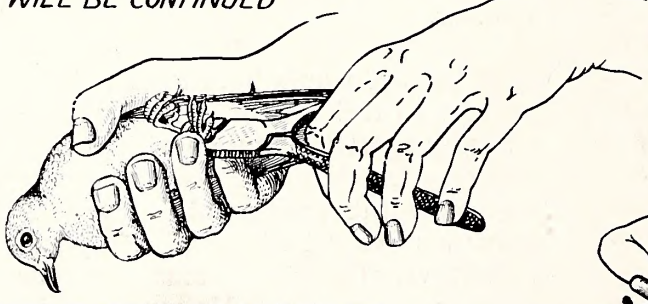
The state administrators, except for those who have not presented these problems clearly and emphatically to the sportsmen and to the legislatures, cannot be blamed. Conservation directors seldom make laws; the sportsmen, through their elected representatives, do. Whether this continent continues to have free hunting or adopts the European system of hunting for the privileged few depends upon you.

SOME 1950 Wildlife COMMISSION HIGHLIGHTS



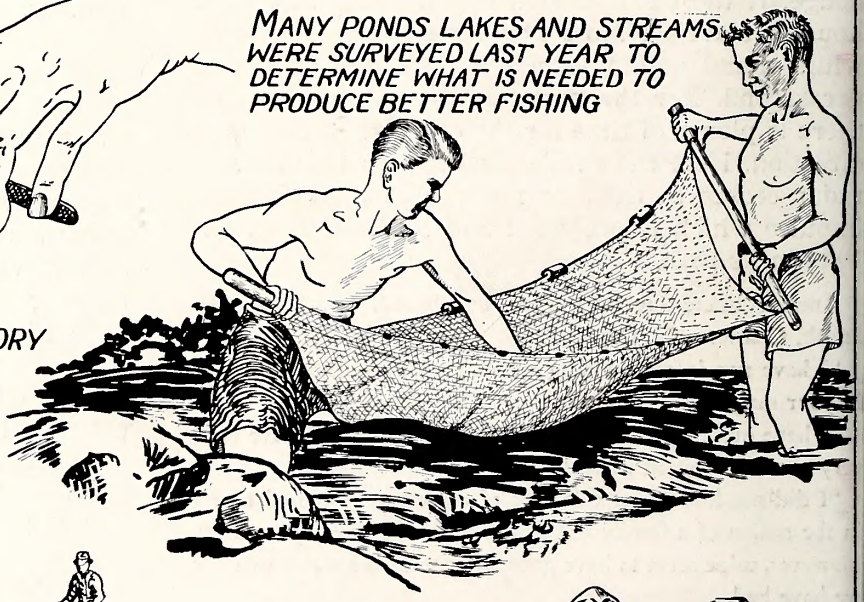
RACCOON AND DEER WERE REDISTRIBUTED FROM ABUNDANT AREAS TO AREAS WHERE THEY WERE SCARCE – THIS PRACTICE WILL BE CONTINUED

EXPERIMENTS ARE BEING CONDUCTED WHICH ARE AIMED AT THE INCREASE OF OUR FUR AND WATERFOWL RESOURCES



COOPERATIVE STUDIES ARE BEING CONDUCTED ON DOVES AND MIGRATORY WATERFOWL WITH OTHER STATES AND THE U.S. FISH & WILDLIFE SERVICE PARTICIPATING

MANY PONDS LAKES AND STREAMS WERE SURVEYED LAST YEAR TO DETERMINE WHAT IS NEEDED TO PRODUCE BETTER FISHING



OVER 4-½ MILLIONS OF BICOLOR LESPEDEZA SEEDLINGS – THOUSANDS OF MULTIFLORA ROSE SEEDLINGS AND OVER TWENTY THOUSAND POUNDS OF SEEDS WERE GIVEN TO FARMERS AND INTERESTED SPORTSMEN

AN EXPANDED AND WELL TRAINED ENFORCEMENT STAFF SET A NEW HIGH IN THE PROTECTION OF GAME AND THE SPORTSMAN'S INTERESTS

Wm Donat

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Wildlife

IN NORTH CAROLINA

TEN CENTS FEBRUARY 1951

Photo by Jack Dermid

PATIENT, OBEDIENT, AND FAITHFUL

—is Honey Baby. A Chesapeake Bay Retriever, owned by John Swindell, Lake Mattamuskeet guide, Honey Baby has a blind of his own beside the hunters' blind. There he waits quietly and well camouflaged until a duck or goose is shot. Then Honey Baby goes into action. See photos on page 23.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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ROD AMUNDSON, Editor
WIN DONAT, Art Editor
JACK DERMID, Managing Editor
MARTY MABRY, Circulation

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COVER

Win Donat painted the barred owl as it might have been caught in a photographer's flash. The "eight hooter" is the most frequently heard owl in North Carolina.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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★ ★ ★

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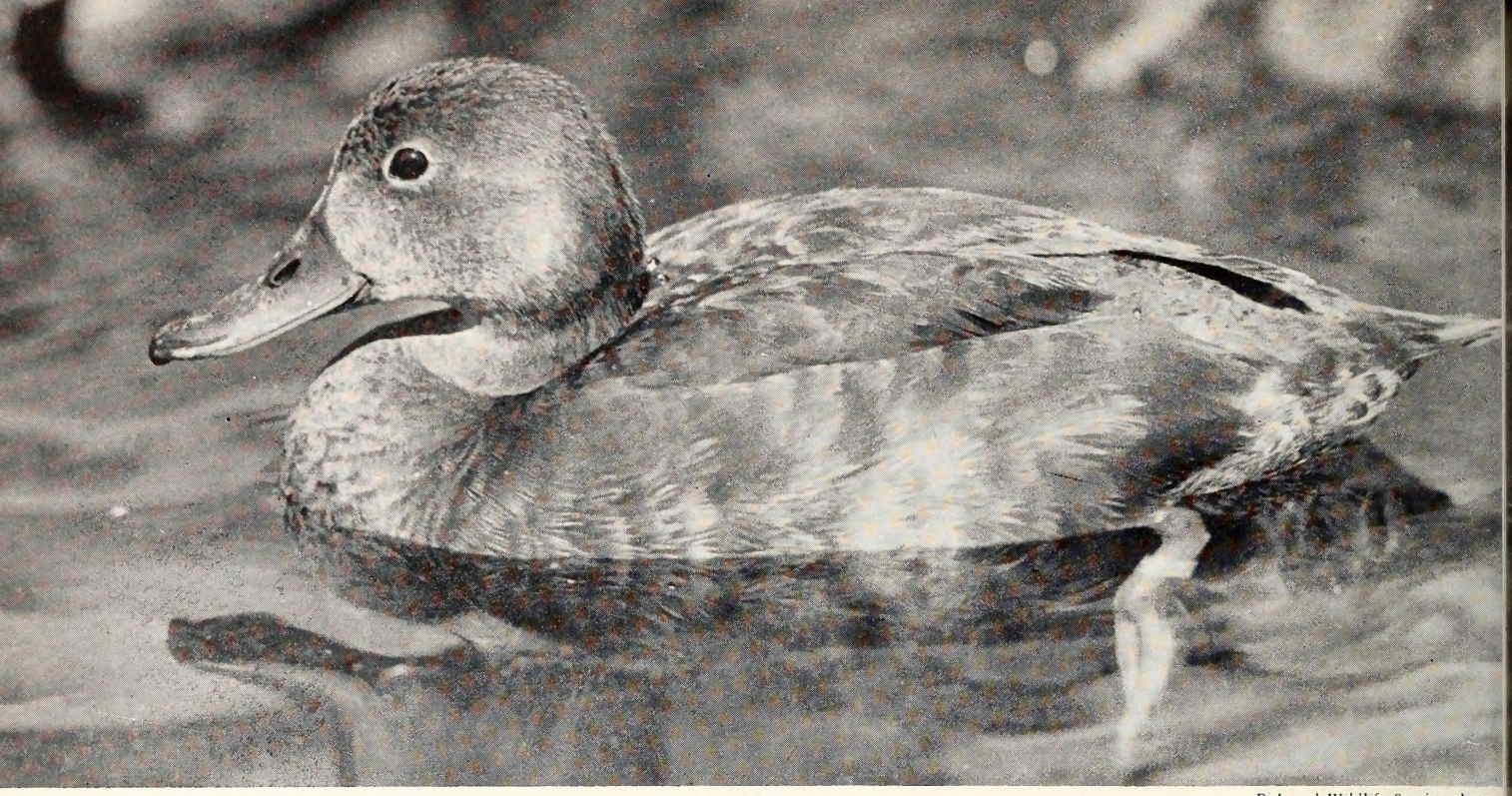


Fish and Wildlife Service photo

Female redhead. Note the leg band. The redhead has decreased more during the past thirty years than any other duck because of the loss of breeding and wintering grounds and overshooting.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-fifth of a Series on The Wildlife Species of North Carolina

THE DIVING DUCKS

By ROD AMUNDSON

HISTORY

STILL within the memory of many people are vast hordes of waterfowl which almost blackened the sky when they made their long migratory flights. The coastal sounds and marshes of North Carolina once provided winter homes for hundreds of thousands, perhaps millions, of ducks and geese and swans. Such vast numbers of birds are probably gone forever. With intelligent management and a restricted harvest, those remaining will survive to perpetuate the species.

What has happened to waterfowl? Very often waterfowl hunters have been blamed for bringing them to their present scarcity. It is true that hunters, especially market hunters, took a heavy toll. Back in the 1880's a pair of ducks brought seventy cents in the market at Raleigh, and only in the present century was market hunting prohibited by law.

In the early 1930's few, if any, informed observers held any hope for the survival of North American waterfowl populations. In 1934 the total population, including ducks, geese, mergansers, coots, and others, was estimated at less than 30,000,000 birds. It is pleasant to report that a decade later there were about four times that many. Let us look briefly at what has taken place.

At the same time waterfowl were being heavily hunted, civilization was advancing so that wilderness nesting grounds in the North and wintering grounds in the South were diminishing rapidly. At the same time wintering and nesting grounds were being drained and put to the plow, a cycle of drouth years occurred which made further drastic reductions in natural waterfowl areas. Meanwhile predators, relatively undisturbed by the effects of drouth and draining, added to the toll of shrinking waterfowl populations.

At long last influential people who had come to realize the great danger in which the waterfowl had been placed, prevailed upon Congress to pass protective laws and provide for physical restoration of wintering and nesting grounds. A system of waterfowl refuges was set up to give winter and summer protection, and to afford sanctuary to the birds on their long migratory flights. Predator control, especially the control of crows in western waterfowl areas, was begun in earnest. Rain returned to the prairie marshes where waterfowl breed; with these factors the long road to survival and restoration was begun.

Since the lowest ebb in waterfowl populations, the increase toward restoration has been slow and fluctuating. The future of waterfowl depends on how well and how earnestly the factors which provide ducks and geese for the fall shooting are controlled.

CHARACTERISTICS

Altogether there are eleven diving ducks which visit North Carolina during the year. For this reason, no effort will be made to describe the individual birds. Instead we will point out differences between them and another large group of ducks, the tipplers.

Diving ducks are given that general name by their characteristic feeding behavior. Where river ducks, or tipplers, feed almost exclusively in shallow water by tipping up their tails and shoveling their bills on the bottom, diving ducks may go down to amazing depths in deep water. No one knows for sure how deep they may go, but fishermen have found them in nets set 100 feet below the surface of the water.

There are, of course, exceptions. Sometimes divers may be found tippling in shallow water, and tipplers diving quite deep in search of food.

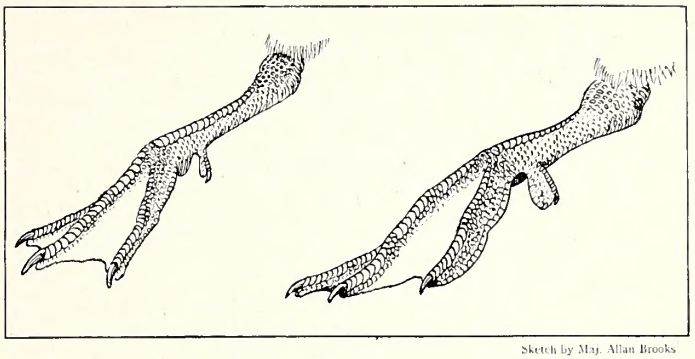
Most of the diving ducks prefer the sounds and bays along the coast, although many of them nest and winter far inland. Because of a general preference for salt water, they are often called sea ducks or bay ducks.

For purposes of identification, there is one invariable characteristic which separates the diving ducks from the others. The hind toe on the foot is deeply lobed, possibly as an adaptation for diving (see illustration).

Another characteristic, although not invariable, is the lack of a speculum in the wings of diving ducks. This "beauty spot" is formed by a band of irridescent secondary flight feathers on the wing, and is found on none of the North Carolina diving ducks.

Diving ducks are generally less at home on dry land than tipplers. Their legs are placed farther backward on the body, an adaptation that may be helpful in swimming and diving, but which does not make walking easy.

Another distinguishing feature is the manner in which diving ducks take off from the water and alight again. Whereas most tipplers can rise almost



Sketch by Maj. Allan Brooks

Diving ducks have a lobed hind toe (right) and can always be separated from the river ducks (left) by this characteristic.

vertically from the surface of water, divers take off at a low angle and with apparent comparable difficulty. Their takeoff resembles that of an airplane, and is almost sure to be in the direction from which the breeze is blowing.

For the most part, diving ducks are less colorful than tipplers, though no one would accuse the lordly canvasback in full mating plumage of being a drab bird. The harlequin, a diver ranging farther north, is a brightly patterned bird, as the name suggests, but does not match the wood duck in beauty of plumage pattern.

BREEDING HABITS

Let us take the canvasback as a representative of the diving duck group for a discussion of breeding habits. The breeding range lies mostly in the Prairie Provinces of Canada with a smaller area in central-southeastern Alaska extending into Canada (Yukon). The Canadian range extends southward

The nests of most diving ducks are built over water in marshes, but the American goldeneye prefers a hollow tree.

Fish and Wildlife Service photo

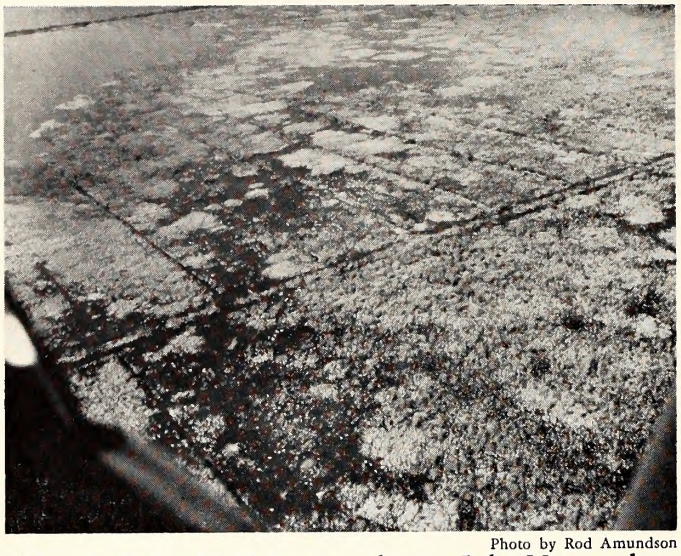


Photo by Rod Amundson

Although this aerial photo was taken at Lake Mattamuskeet, it is representative of the wide shallow marshes of the northern breeding grounds.

into Montana, Idaho, part of Wyoming, Utah, Washington and Oregon. Eastward of this projection is another area covering northeastern Montana, most of North and South Dakota, central Nebraska, and part of Minnesota. In general these are prairie areas, and wide shallow marshes which have not been drained provide ideal nesting habitat.

It should be remembered that the above range applies especially to the canvasback and that the nesting range of all of the diving ducks would involve a much wider territory.

The rearing of young begins with a period of courtship wherein several drakes may vie for the favor of a single duck. On the water males display their nuptial plumage, arch and stretch their necks backward, and give voice to soft mating calls.

In the air the mating courtship is even more spectacular. A group of drakes may pursue closely behind a duck, with the whole group flying in tight formation. The pace of this flight is set by the female, and may consist of a series of dips and dives and quick turns.

Once a mate has been chosen by the female canvasback, it is not unusual to see him follow her along in flight with his bill clamped down tightly on her tail feathers until she finally shakes him off.

In common with most of the other diving ducks, the nests of canvasbacks are usually built over water as compared to shore nests of many of the tipplers. Little apparent consideration is given by the female canvasback in selecting a nesting site. It may be in a tangle of marsh vegetation close to the shore of a marsh, or in a heavy growth of bulrushes over water several feet deep. The nest itself is built with materials provided by marsh vegetation and collected in a dense mass. The nest is lined with downy breast feathers plucked from the female's chest. In deeper water the nest may be half floating and half sustained by surrounding vegetation. In more shallow water the nest begins at the bottom and is built up until the rim is well above the water.

Eight or nine large gray-green eggs are deposited in the nest, and occasionally an egg-laden ruddy duck or redhead will add to the clutch. After from 24 to 28 days of incubation the golden downy ducklings hatch, and almost immediately take to water. In the northern reaches of the nesting grounds the days are long and the young canvasbacks spend up to 20 hours a day feeding in the homeland marshes.

Plumage develops rapidly, and the youngsters are normally ready to fly at the age of ten weeks. Young birds resemble mature females until fall, when by November the drakes have taken their characteristic coloration.

FOOD HABITS

Their ability to dive gives canvasbacks access to foods found in deep water. Their diet is about 81 per cent vegetable and the balance animal matter. They like the roots and tubers of aquatic vegetation and dive down into water ten to twenty feet deep to obtain it. They eat the seeds of marsh plants, and forage for wild celery, duck potato, grasses and sedges. On the southward migration across the prairie states, canvasbacks may stop off to glean a grain field, although they are not as fond of field grain as are mallards, for example, in the tippler group.

Animal matter such as mollusks, insects, and small fishes comprise about 19 per cent of the diet. On the west coast a fondness for rotting fish and salmon eggs has made the canvasback too fishy in flavor to be eaten.

On many occasions canvasbacks and other ducks have suffered in competition for food with muskrats. Muskrats, where they have become overabundant, may destroy the marsh vegetation to a point where ducks can no longer find sufficient food. Such situations are easily corrected by the expedient of trapping enough muskrats to allow both the rats

Fish and Wildlife Service photo

Count them! There are about 150 canvasbacks in this photo. Diving ducks commonly assemble in large rafts.

and the ducks to inhabit a marsh. A reverse of this situation occurs. Many marshes would become so heavily grown with vegetation that ducks could not find sufficient open water if the muskrats did not cut considerable quantities of bulrushes and other marsh plants.

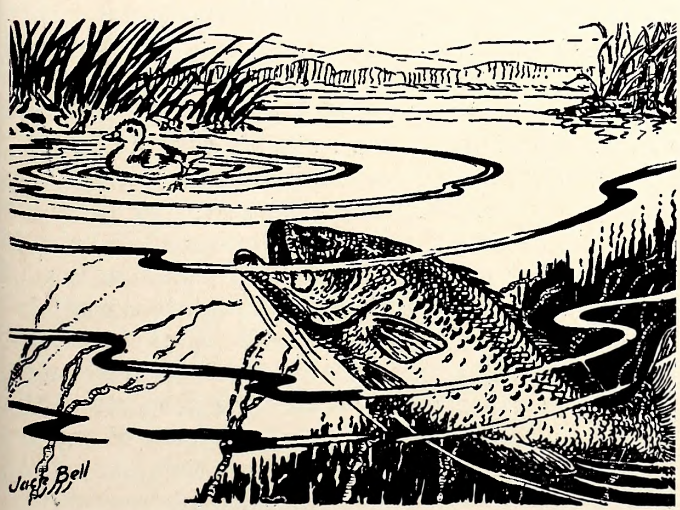
MIGRATION

Like other waterfowl, canvasbacks follow distinct migration routes. Their north-south flights carry them from the extreme northern part of their nesting grounds all the way south to central Mexico, or southeastward to Florida. The main wintering grounds of the canvasback lie along the east coast from Long Island to northern Florida and along the gulf coast to central Mexico; on the west coast it extends from Seattle southward to southern California and the west coast of Mexico. These locations are general, and some time or other canvasbacks may have spent the cold winter months in every state in the union. In North Carolina they winter mostly along the coastal marshes and swamps, but have been observed in the TVA reservoirs in January.

NATURAL ENEMIES

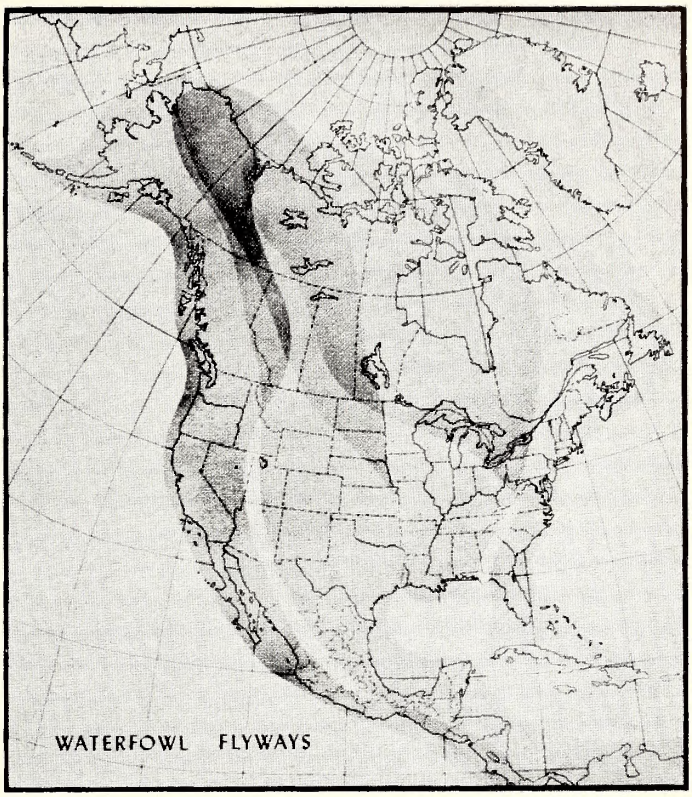
Although drouth and drainage have been the most important enemies of diving ducks, shooting has had an important effect. Throughout their lives they are in danger from predation. The nests may be robbed of eggs by crows or raccoons and even skunks, where these robbers can gain access, and the young birds are vulnerable to snapping turtles, duck hawks, and even large fish.

Botulism has occurred with drastic effect in the alkaline marshes of the northwest, and lead poisoning has taken a heavy toll where the ducks ingest shotgun pellets while feeding. The birds may be infected with the diseases of domestic poultry, and at times suffer heavy infestation of both internal and external parasites.



From Wildlife Management Institute

Snapping turtles and large fish are among the many natural enemies of young diving ducks.



Fish and Wildlife Service map

North America has four waterfowl flyways. Research indicates that each flyway contains a population unit and thus can be managed according to its particular needs.

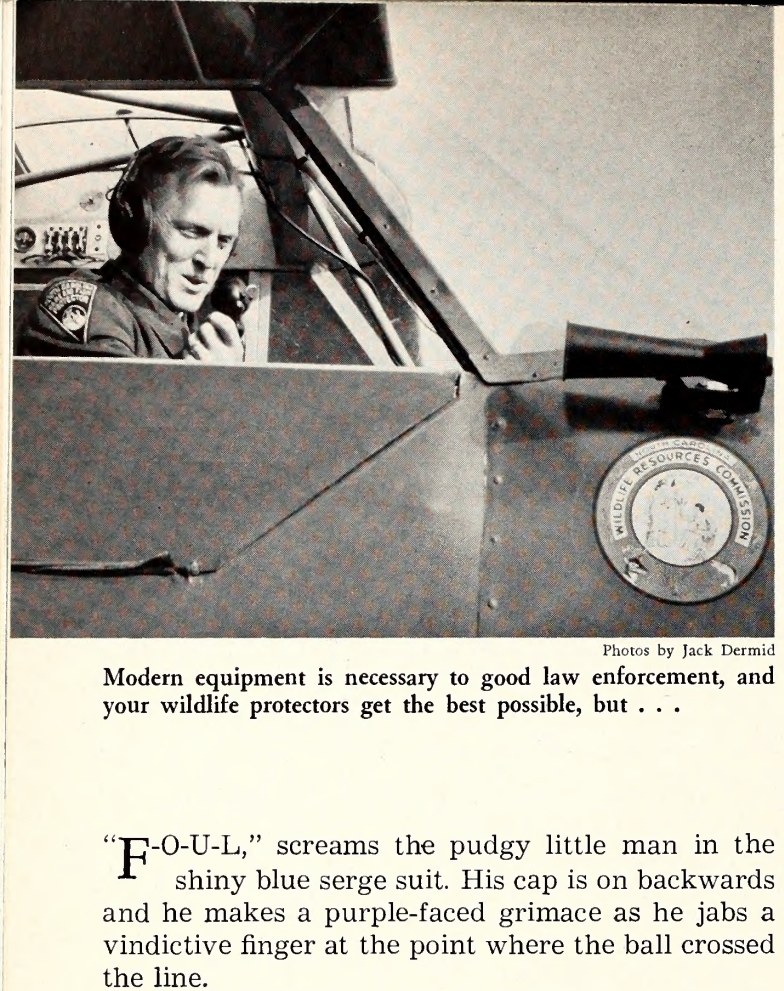
MANAGEMENT

The management of diving ducks simmers down to three important factors: an adequate supply of undisturbed marshlands for breeding, an adequate amount of wintering grounds, and plenty of protection from Man, the Number One predator.

Since three countries are involved in the yearly activity of ducks, the United States, Canadian, and Mexican governments have formed a treaty whereby the birds are protected throughout their range. In the U. S. both federal and state governments are responsible for the enforcement of migratory waterfowl laws. A great responsibility rests on North Carolina as part of the winter range.

Waterfowl as a whole have probably passed the mark of extreme danger, and despite local fluctuations, seem to be on the increase. This increase can continue only as long as people are aware of the problem and are willing to cooperate with the agencies responsible for their welfare.

- Adequate Food and Cover are Necessary if Wildlife is to Thrive.
- It is not too late to place orders for current delivery of Bicolor Lespedeza.



Photos by Jack Dermid

Modern equipment is necessary to good law enforcement, and your wildlife protectors get the best possible, but . . .

Your Friend

THE WILDLIF

By V

"F-O-U-L," screams the pudgy little man in the shiny blue serge suit. His cap is on backwards and he makes a purple-faced grimace as he jabs a vindictive finger at the point where the ball crossed the line.

The runner trots back to base and the fans sit on their blood pressure and hope that the next chance will bring in the tying run. The game gets under way and the better team of the day will win.

Where, then, is the tie-up between a baseball game, or any other game, and the game laws? The answer is increasingly clear. The sports of hunting and fishing are, for us, games to be played the same as any other form of group recreation. Even the amusements requiring as little physical activity as setback, bridge, or canasta have playing rules and penalties.

Nearly all creatures like to play. One needs only to have watched young rabbits on the lawn at twilight, or kittens, or perhaps the rare sight of otters at their slide at the edge of a pool to know that he has seen pure play. There was no food-getting, self-preservation, or even courtship factors in these antics. The animals were playing.

It is not surprising that we find no evidence of cheating among the animals; and when we examine the games in which we participate, there is very little actual deliberate cheating. Why? Isn't it because we pride ourselves on being a Nation of good sports? America, the home of the true sportsman. We would rather be horsewhipped than be labeled a poor sport, and yet the prosecution reports of nearly all state game agencies show an alarming increase in the number of game law violations. This is concrete evidence of poor sportsmanship.

Yes, there is more of a connection between a game played on the athletic field and squirrel hunting in the woods than many of us realize. The games of hunting and fishing put a premium on individual dependability and individual honesty. No umpire, referee, or field judge accompanies us in the field or on the streams when we hunt and fish. It would be impossible to furnish that much supervision. Nearly one-half million people hunt and fish in North Carolina. We are entirely on our own and those who are prone to set aside the rules of the game, in most cases, do so knowingly and willfully. Their thinking goes something like this: "There's only one game warden in this county; I know the county better than he does and he's sort of on the stupid side anyhow," or "What if it is out of season, or after hours, or illegal game? I haven't been caught yet, and the chances are I can beat the case if I am caught."

These are the same rabid fans who scream for fair play, justice, and honesty on the athletic field. They would disavow a life-long friendship for a partner who cheated. They even go so far as to announce their support of the game commission or berate that body because it doesn't have enough game wardens!

Game Laws

Let's examine the basis of the rules governing our hunting and fishing. Long ago, when all game, both in England and America, belonged to the Crown in trust for the people, it was decided ". . . that these United Colonies are, and of Right ought to be, Free and Independent states . . ." This was the birth of the American Democracy, a government of, by, and for the people. Naturally, the status of the wild creatures became a question to be settled. When the basis for our law was formed, the common law of England plus all English statutes prior to the revolution, so far as they were applicable to our conditions, constituted the common law of the various states. By this adoption, game became the property of the people collectively and not the property of any individual or group. The sports of hunting and fishing likewise became privileges and not inherent rights.

This point is clear—when we hunt or fish, we are playing a game and *using a privilege.* We are not

PROTECTOR

WNAT

There is a similarity between foul balls and game laws. The wildlife protector, your own employee, is an umpire to insure fair play. Read this thought-provoking article.

getting meat necessary for our families—that went out with Indian fighting—and even at present day prices, butcher-shop fish or meat is cheaper than the products of our streams and fields. So let's face the facts. Game is a crop of our land and water. There is just so much of it for the sportsman to harvest each year and leave enough stock to provide for the next year. The only fair and sportsmanlike solution is for everyone to share and share alike. There can be no special privileges or favored groups.

The daily bag and possession limits are carefully considered ration allotments and are based on the game supply, harvesting pressure, and natural replacement requirements. The last of these includes productivity, breeding season, and food and cover necessities. These, then, are the boundary lines similar to those in our athletic contests.

The open and closed seasons can be compared with the scoreboard clock. The same can be said for the daily shooting hours. The seasons are not "pulled out of a hat;" they represent the time when the crop is ready to harvest.

The laws which regulate the methods and equipment permitted in the taking of game may be found to exist in similar regulations regarding sizes and weights of footballs, golf balls, and baseballs as well as many of the accessories used in playing these and other games.

One more factor becomes part of this picture. The game warden is the counterpart of the umpire or referee. In the sandlot ball games the umpire is chosen from those available, even though he may have strong partisan leanings. Yet, under these informal conditions he tries to call the play as he sees it according to the rules, and his decisions usually govern. Since wildlife protectors are paid by funds collected from the sale of hunting and fishing licenses only and not from funds appropriated from the general treasury as many believe, these officers become the *employees* of the sportsmen!

In this day, employer-employee relations are a vital factor in our national economy. We find the relationship vital not only to the factory operator and the store owner, but to the farmer as well. Witness the labor bill which takes a part of the proceeds from your cotton and tobacco crops! We have learned that our employees must be treated fairly, and in order to get the maximum efficiency, we must support and co-operate with them. Does this not apply to our wildlife protectors? After all, they are working for us and our interests. It is true that they are relatively few in number, but here is a most important fact—if each wildlife protector had the full support and cooperation of the people, there is no question that the demand for additional protectors would be lessened. The greatest benefit to result from such a cooperative effort would be more game and better hunting and fishing for all of us!

. . . the protector's efficiency is proportional to the support given him by sportsmen, whose game he protects.

The North Carolina Wildlife Resources Commission had set aside well over one-half million dollars for law enforcement work during the year 1950-51. This, sportsmen, is your money; most of it pays the salaries and expenses of your wildlife protectors. Every effort is made to secure the highest type of man and to give him the best training and equipment. As quickly as possible, cars are equipped with two way radios, a patrol plane is on duty the year 'round, and "walkie-talkie" equipment is used in the field.

Patrolmen Cooperation

In order to cover areas where concentrations of officers are needed, a special group of patrolmen is available and these officers may be assembled on short notice from the nine districts of the State. Such a group has the advantage of being able to concentrate wherever needed without leaving any one area short of protection.

The men of the game enforcement division are co-operating with and working for the sportsman and his interests. They do not ask for more than reciprocal help and friendly assistance. They also love to hunt and fish, yet their work finds them in the field checking licenses, not with an insane passion for finding someone they can prosecute, but to insure the interests of those who have paid their share against the chisler and the thief. When a protector asks to see our game or fish, he is not being nosey or curious. He is doing the things we have employed him to do. He is the referee calling in the yardsticks to measure for a first down.

"Why," you might ask, "all this prattle about game?" Probably the first reason lies in the general tendency to take for granted such things as the productivity of the soil, the air we breathe, our wildlife, and other resources. Our land has been a rich bounty of resources that were there just for the taking. As long as the taking pressure did not exceed the ability of the resource to replenish itself, the supply kept ahead of the demand. This is true of the renewable resources only; the minerals and other non-renewable resources, once used, never can be replaced.

Our Game Commission and other resource agencies are pointing to the abuses and exploitations of the past, the clean-cut and burned forest lands, the polluted and silted water courses, the gullied fields, and the decreasing supply of wild animals, birds, and fish, and they are saying, "Citizens, these are your treasures. They are being wasted needlessly, and those that are capable of being renewed have been neglected. Let's do something about it!" Truly, our resources are the foundation blocks upon which the greatness of our country is built, and it is up to us to plan now for a program of wiser use.

We have tried to draw a parallel between the

(Continued on page 17)

DON'T FORGET!

Here are the deadline dates for the Wildlife Essay Contest:

All essays must be completed and handed in to high school judging committees on

THURSDAY, MARCH 1

●

Winners in each school must be determined by March 10.

●

County winners must be determined by March 20.

●

District winners must be determined by April 1.

●

State winners must be determined by April 10.

●

REMEMBER...

18 high school students will get a free trip to the annual Wildlife Federation meeting.

●

SEE JANUARY WILDLIFE FOR COMPLETE RULES

Here's the winning essay of Cherokee County in last year's contest —

NORTH CAROLINA STATE LIBRARY

SPORTSMANSHIP IS CITIZENSHIP

By H. C. ALLEN

Hiwassee Dam School Student

BEFORE the coming of the white man to America the supply of wild game animals was practically unlimited and the Indians used these animals for food, clothing and shelter. Usually an Indian was permitted to kill as much game as he desired, but during seasons when the animals were scarce, the chief of the tribe often set a limit on the amount of game each man could kill. This was done to avoid waste. Any man who killed more than the limit was punished, usually by banishment from the tribe or by a public whipping.

Then the white man came to America, bringing guns. At first the white men killed only a little game, due to the fact that the settlers were few in number. As the pioneers became more numerous, however, they began to push inland, settle, and kill more and more game to provide food for themselves and their families. This aggression on nature continued across the mountains, the Great Plains and all the way to the west coast. During these years many men made a living by either trapping fur-bearing animals and selling their pelts, or by killing larger animals for their meat and hides. The result was a wholesale slaughter of game animals.

Now, 330 years after the arrival of the first settlers, we have game laws to protect game animals. But these laws were made belatedly to protect game, some of which was virtually non-existent when these laws were passed. However, these laws are certainly worthwhile, for they have protected game until most species of game animals are again fairly numerous.

Still we, the sportsmen of America, must all be made to realize that these laws are for the good of the sportsmen as well as the game, or the game laws will have partly failed, for laws can be, and are being, violated and the offenders are not always caught. If all the people could be made to fully realize that to violate game laws endangers the future supply of wildlife, then those laws could be struck from the books. Unfortunately this will probably never become fact, and people will go on paying money in the form of taxes to hire wardens to enforce game laws.

A personal observation of the writer is that seventy-five per cent of the local sportsmen in my community violate game laws each year. Being in a fairly good hunting section, and very close to a fine fishing lake, the writer is in a position to see just what goes on. People hunt before the hunting season opens, fish before the season opens, catch more fish and kill more game than the law allows, and keep game fish which are under the size limits. It has also been noticed that each year fewer fish are caught and less game killed than in the previous year. This has gone on year after year, despite the efficient game wardens which we have in our county. The reason is that these wardens cannot be everywhere at once. Every day or so someone in this section is caught and fined for violation of game laws, yet almost invariably the violator will do again the same things for which he was fined. The writer believes that the reason that this is done is because the chances of being caught violating game laws are small, and being caught one time is not enough to cause a violator to stop. Harsher punishment for violators might partly remedy this.

The foregoing paragraph clearly shows why the writer has chosen the topic "Sportsmanship Is Citizenship." It is because local sportsmen need sportsmanship impressed on their minds, because they do not hold game laws in as much esteem as they do other laws, and because something must be done in my community to preserve wildlife for the posterity of those who now so wantonly kill and waste.

The main reason for the low respect toward game laws is that local people look upon game as personal property. They seem to think that because it is a natural resource and that, since it belongs to one as much as another, they should be allowed to do with wildlife as they so desire, without interference from anybody. It is this attitude that is bringing destruction to so much of our game.

A change might be brought about if our sportsmen were more thoroughly enlightened on the purpose of game laws. It might mean the difference between a future without game animals, and a future which holds the pleasures of sporting for unborn generations.

NATURE'S

Of the miracles of nature none is more wonderful than the cycle by which nature creates life and nurtures it in productivity unless environment is changed. Nature's mechanism is complex; its essence lies in the interdependence of:

Soil
Plant life (from bacteria to forests)
Animal life (from protozoa to mammals
Water

BALANCE

Soil is the source of all plant growth. But it requires water before plant life can emerge. Animal life, in turn, is largely dependent on vegetation, while the soil and plant life both draw essential elements from animal life and death. An equitable flow of water depends on the presence of extensive forest, grass and other vegetation. Change in any one of the four basic elements inevitably changes the condition of the other three. The community environment is changed.

—From "This Land of Ours,"
Public Affairs Pamphlet 162.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

AT PRESS TIME THE GAME DIVISION OF THE WILDLIFE RESOURCES COMMISSION HAD TWO AND ONE-HALF MILLIONS OF BICOLOR LESPEDEZA SEEDLINGS AVAILABLE IN LOTS OF 1,000 FREE OF CHARGE TO FARMERS, LAND OWNERS, 4-H, AND FFA MEMBERS FOR WILDLIFE FOOD PLOT PLANTINGS. APPLICATION FOR THE FREE SEEDLINGS SHOULD BE MADE TO DISTRICT SOIL CONSERVATION AGENTS, WILDLIFE COMMISSION FIELD BIOLOGISTS, OR DIRECTLY TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH. A PACKET OF 1,000 BICOLOR SEEDLINGS IS SUFFICIENT TO PLANT A FOOD STRIP 15 FEET WIDE AND 500 FEET LONG.

AT ITS JANUARY MEETING THE WILDLIFE RESOURCES COMMISSION PASSED A RESOLUTION WHICH WOULD PLACE ITS ENTIRE STAFF OF PERSONNEL AT THE DISPOSAL OF THE STATE DEPARTMENT OF CIVIL DEFENSE FOR TRAINING PURPOSES AND IN ACTUAL EMERGENCY. IN CASE OF AN EMERGENCY THE WILDLIFE COMMISSION WOULD MAKE AVAILABLE ITS PATROL PLANE, TWO-WAY RADIO COMMUNICATIONS, PATROL CARS, AND IF NECESSARY, HEAVY CONSTRUCTION EQUIPMENT.

THE WILDLIFE RESOURCES COMMISSION NOW HAS AVAILABLE FOR FREE DISTRIBUTION A NEW 16 MILLIMETER SOUND-COLOR MOTION PICTURE ENTITLED "TAR HEEL WILDLIFE." THIS IS THE FIRST MOVIE OF ITS KIND EVER PRODUCED IN NORTH CAROLINA FOR NORTH CAROLINIANS ON THE SUBJECT OF WILDLIFE CONSERVATION.

BRIEFLY, THE FILM TRACES THE HISTORY OF THE EFFECT OF CIVILIZATION ON WILDLIFE POPULATIONS AND DEPICTS THE MEANS THAT ARE BEING TAKEN TO CONSERVE AND RESTORE OUR FISH AND GAME. THE FILM FEATURES CLOSEUPS OF VARIOUS GAME ANIMALS, GAME BIRDS AND FISH IN THEIR NATURAL HABITAT, AND HAS A NUMBER OF SCENES OF ACTUAL HUNTING FOR RABBITS, QUAIL, DEER, GROUSE, AND CANADA GEESE.

THE NEW FILM WILL BE DISTRIBUTED FREE TO SCHOOLS, WILDLIFE CLUBS, AND CIVIC ORGANIZATIONS. IT WILL BE IN HEAVY DEMAND, AND FOR THAT REASON BOOKINGS SHOULD BE REQUESTED AT LEAST ONE MONTH IN ADVANCE OF SCHEDULE DATE. RUNNING TIME APPROXIMATELY 25 MINUTES. FOR BOOKINGS ADDRESS EDUCATION DIVISION, WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH.

OVER 30 DEVOTEES OF FIELD TRIALS AND OFFICIALS OF THE WILDLIFE RESOURCES COMMISSION MET IN RALEIGH ON JANUARY 10 TO LAY FURTHER PLANS FOR THE ORGANIZATION OF A NORTH CAROLINA CHAMPIONSHIP FIELD TRIAL ASSOCIATION UNDER THE SPONSORSHIP OF THE N. C. WILDLIFE FEDERATION. ROLAND McCLAMROCH, CHAPEL HILL, PRESIDENT OF THE WILDLIFE FEDERATION OFFICIATED AT THE MEETING UNTIL P. K. GRAVELY, ROCKY MOUNT, WAS UNANIMOUSLY ELECTED CHAIRMAN OF THE ASSOCIATION. D. STATEN INSCOE, RALEIGH, AND ARNOLD PHILLIPS, ASHEVILLE, WERE UNANIMOUSLY ELECTED VICE- PRESIDENTS.

THE FIELD TRIAL GROUP MET AT NOON FOR A DUTCH LUNCH AND CONVENED OFFICIALLY AT 1:00 P.M. A TOTAL OF 16 SPORTSMEN ACTIVE IN VARIOUS TYPES OF FIELD TRIALS WERE APPOINTED TO A STEERING COMMITTEE TO LAY DOWN GENERAL POLICIES FOR CONDUCTING CHAMPIONSHIP TRIALS. FIELD COMMITTEES COMPOSED OF GROUPS OF SPORTSMEN IN EACH OF THE FOUR TYPES OF GUN DOGS (BEAGLES, BIRD DOGS, COON HOUNDS AND FOX HOUNDS) AND THESE COMMITTEES WILL MEET IN THE NEAR FUTURE TO DISCUSS FURTHER PLANS FOR ORGANIZING CHAMPIONSHIP TRIALS IN THE VARIOUS GROUPS.

IN COOPERATING WITH THE WILDLIFE FEDERATION AND THE CHAMPIONSHIP FIELD TRIALS ASSOCIATION, THE WILDLIFE RESOURCES COMMISSION IS MAKING AVAILABLE AND DEVELOPING LANDS IN THE SANDHILLS WILDLIFE MANAGEMENT AREA FOR THE PURPOSE OF CONDUCTING FIELD TRIALS. IT IS EXPECTED THAT BY EARLY SPRING COON DOG, BEAGLE, AND BIRD DOG TRIALS MAY BE CONDUCTED IN THE SANDHILLS AREA.

SPORTSMEN ATTENDING THE JANUARY MEETING OF THE CHAMPIONSHIP FIELD TRIALS ASSOCIATION AGREED THAT SUCH MEETINGS AND THE ORGANIZATION OF A FIELD TRIAL ASSOCIATION WILL GO A LONG WAY TOWARD FINDING A COMMON MEETING GROUND FOR VARIOUS TYPES OF HUNTERS. PAY-OFF FOR THE CHAMPIONSHIP TRIALS WILL BE VALUABLE TROPHIES AWARDED TO THE BEST DOG IN EACH OF FOUR CLASSES IN NORTH CAROLINA.

The butcherbird and two of its victims: a green snake and a harvest mouse.

The Butcherbird

A NATURE SHORT

Story and Pictures by Jack Dermid

I WILL never forget my first and painful encounter with the butcherbird. I was a youngster, then, out gunning with a companion. When the butcherbird slipped from its perch and skimmed low over the meadow, my friend inadvertently fired at it. The bird fluttered to the ground, slightly wounded, and I ran to pick it up. No sooner had I grasped it than I withdrew my hand in pain. The butcherbird had caught one of my fingers in its bill and had given it a terrific pinch. I looked unbelievingly, first at the sphere of blood that rose slowly on my fingertip and then toward the massive black bill of the fierce little bird.

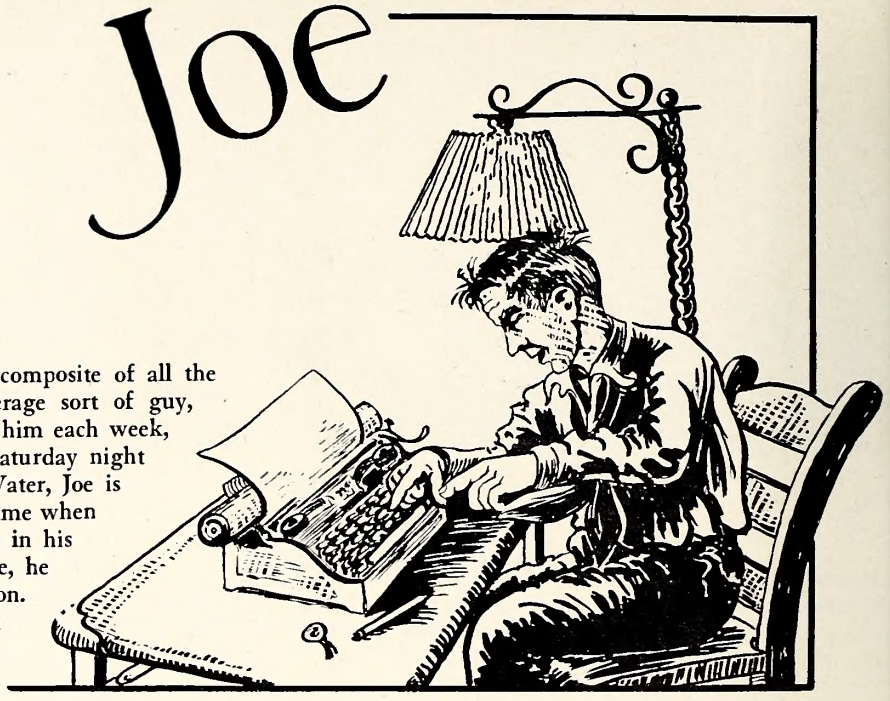
The butcherbird is about the size of a mockingbird, which it superficially resembles. It has even been called the "French mockingbird." Although both species are dressed in shades of gray, white, and black, they can be easily distinguished. The butcherbird has a black mask across its eyes, but the two birds could never be confused because of temperment alone. One is a cheerful singer of renown; the other seldom sings, and when it does only the curious will stop to listen. The butcherbird is a silent and solitary bird of the open fields and roadways, where it is frequently seen perched high on a snag or wire waiting patiently for a luckless victim.

Known as the shrike to ornithologists, the butcherbird received its descriptive nickname from the habit of impaling its prey upon thorns, barbed wire, snags, or similar devices. To the uninitiated, the finding of a shrike's larder is very surprising and mysterious, for it may contain one to many small snakes, mice, lizards, small birds, grasshoppers, or other animals. More than once has the location of such a cache created enough interest to warrant a series of newspaper articles, beginning with the question, "Who goes about hanging desiccated creatures on barbed wire fences?" and ending with the blame being placed upon the butcherbird by a local ornithologist.

Ornithologists have offered two reasons for the shrike's larder. Some simply say that the shrike stores surplus food for use during times of scarcity. The reason must be deeper than that, however, for the bird seldom returns to devour old kills. The victims soon dry out or decay, as with the harvest mouse in the above photo. But it can not be denied that the butcherbird will come back on occasion. One returned to remove the green snake, above. A more plausible explanation is based on structure and is generally accepted today. The shrike, being a perching bird and not a raptor, has weak, sparrow-like feet and is incapable of holding down its prey while tearing it apart with its hawk-like bill. To facilitate feeding, then, the shrike carries its victim to a thorn and anchors it firmly. Many small animals are abandoned in position, partially or totally undevoured. Thus a shrike's larder comes into being, and a suitable bush may become a catchall for many kinds of animals.

Because the butcherbird occasionally hangs up a songbird for all to see, it has a bad reputation with many bird enthusiasts. In truth the butcherbird's insect-eating propensities far overshadow its diet of larger animals. It is a beneficial bird. Two forms regularly occur in North Carolina: the loggerhead and the migrant shrike.

Dear Joe



Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Just an average sort of guy, whose wife takes his pay check away from him each week, lets him have a session with the boys on Saturday night and has learned that come Hail or High Water, Joe is going to go hunting or fishing most of the time when he is not working. The questions that arise in his mind about North Carolina's fish and game, he asks of the Wildlife Resources Commission. These letters are our answers to Joe. He's a nice guy and we like him. He's the guy we work for.

Dear Joe,

As you suggest, it would be nice to have a few crappies in your pond. Just a few; so that on those off days when the bass refuse to hit and the bream pay no attention to a popper, you can take some top minnows and pick up a mess for dinner down by that old stump in the deep water. You are right, too, that it would be no trouble to pick up a couple of days' creel limits in the big lake most any week-end for the stocking of your pond.

Joe, do you have any idea what forty speckled perch can do to your pond in a couple of years? Let's back up a bit and try to imagine what fish you have in the water right now. You remember that the Fish and Wildlife Service gave you the bass and bream to stock your pond after the Soil Conservation Service helped you build it. You remember that they gave you 100 bass and 1,000 bream per acre. Those numbers were not just an accident, Joe. It took years of experimental work to find that such a stocking would give you the best fishing and the most pounds of fish per acre. That is true just so long as no other fish are in a pond when it is stocked and none are added later. The total food supply in the pond, and the probable reproduction by each species present are problems to be considered.

A female crappie will average about 30,000 eggs, while a bluegill bream will have about 10,000. You can see what this will do to the fish population in your pond in a few years.

Then think about the size of the crappie's mouth compared to a bream. Even a big bream has a small mouth. It is not likely that he would mind eating fish if he could get them in his mouth. It's just that insects are about the only thing he can swallow, and so he does not raid the supply of little fish very much. A crappie, on the other hand, will compete with the little bream for food while it is small, leaving just that much less for the bream to grow up on. Then, because he can open up the whole front of his face, he will eat little fish and outgrow the bream. When he starts feeding on fish, he will compete with the bass for food and eat the small ones.

The result of putting crappies in your pond, then, will probably be a stunted and hungry bream population to small for your use; fewer bass than you have now and no little ones coming on; and lots of little crappies too small to catch. That is what usually happens to farm ponds when crappies are added to the bass and bream. They ruin the fishing in just two or three years. Keep the crappies out of your pond, Joe! It's a nice pond the way it is. Good bass fishing in the early spring and fine bream fishing all summer. You don't draw to an inside straight, Joe. There is even less chance of having continued good fishing if you put crappies in your pond. Don't do it!

Next, you asked about how many people you should invite to fish in your pond. It's a good idea to invite them all, believe it or not! Remember, in the last letter we talked about fertilizing your pond and how it increases the food supply. There is no use in raising all those fish unless you use them.

So long as your friends stick to hook and line fishing, they cannot take out too many fish. There will be plenty of brood stock left. You see, there is a definite amount of food in the pond, and that food will supply a definite number of pounds of fish. It makes no difference whether those pounds of fish are big ones or little ones; the food supply sets the limit on the carrying capacity of the pond. Unless

the big fish are taken out, the little ones do not get enough food to grow up. Just as soon as you harvest some of the crop, smaller fish grow up to take their place. Out of each year's crop of bream, for example, it is expected that the bass will eat most of them. There still will be more little ones left than there is food for. The only way they can get enough food to grow up to eating size is for you to take out all you can catch.

Don't hesitate to catch the bream off their beds, either. That is one of the best ways to take out as many as you should for the best interest of your pond. If all the bream spawn successfully that are large enough to do so, you will soon have a whole pond full of three or four inch bream, and even fertilizing the pond will not produce enough food for them to grow up.

This business of catching bream reminds me of my first dose of "chiggers"—or do you call them "red bugs"? I had gone squirrel hunting and really picked up a good dose of them. Friends advised all sorts of remedies, none of which did a bit of good, and I was walking up the street, cussing quietly and scratching as unobtrusively as it is possible to do when the red bugs get you. An old colored friend of mine, Uncle John, came along and I asked him what he did when he got a bad dose of chiggers. He said, "I scratches, Cap'n! And when I gets them bad, I gets Mandy and all the kids to help."

So that is the best thing to do about the fishing in your pond, Joe. Fish the daylights out of it yourself. Then, for the benefit of your pond, and in the interest of catching big ones next year too, invite all your friends to come help you fish. Bribe them if you have to, but you need their help in keeping the big fish out of the pond so the rest can grow. You will make more friends that way and your pond will be benefitted, too.

Whenever any more problems worry you, write again and we will try to answer them. Say "hello" to Mary and the kids for me, and let me know when you can get off for a few days to go fishing. Just got a red hot tip that the Rock are hitting down on the east coast, and we *should* do something about it.

Best wishes,

Harry Cornell

● Continued from page 10 ●

playing of games and hunting and fishing. We recognize the importance of rules in other games and look upon the game laws as the only means of providing an orderly and fair set of conditions for all who participate in these sports. Observance of the rules depends on our own reliability and honesty, and the game protector is our friend, and employee, not a bullying arm of the law. Most violations of the game law are willfully and deliberately committed against better knowledge and judgment.

In many counties and cities of North Carolina the sportsmen have formed clubs for the express purpose of bringing together the people who are interested in hunting and fishing. After a few short years of existence, many of these groups have exerted a definite influence toward better game law observance. Where valid violations have been brought in for trial and were not receiving the conviction which was due, or where the costs only were levied, the aroused opinion of the local sportsman's group often has been effective in bringing about a change in attitude of the courts.

Perhaps the greatest single boost that any one of us could furnish to the improvement of hunting and fishing is an improved personal appreciation and interest in our part of the ownership, harvest, and perpetuation of our wildlife crop toward the end that we may have more sport for more people with an equal opportunity for all to enjoy it.

The toad's tongue is attached in front, not at the rear of the mouth. This allows it to be flipped out from back of the toad's mouth and as quickly flipped back to the opening of the throat.

"JOE BEAVER" By Ed Nofziger

Forest Service, U. S. Department of Agriculture

"Stripped your woodlot, eh? Don't you know the only things we can really leave our children are well-managed natural resources?"

TIE YOUR OWN GARDEN HACKLE

By BILL HAMNETT

Wildlife Education Representative

There are times when the biggest drawback to fishing is getting worms for bait. Why not eliminate this chance by raising worms for bait right in your own back yard. Time and effort spent now should repay you well in late summer.

Easily constructed and well prepared worm beds are the answer. A suitable soil is the first requirement for successful beds. There must be no sand in the soil used. Proper moisture and shade protection are the next requirements. To combine all of these and to derive the maximum benefit it is suggested that boxes or tubs be used as beds. A satisfactory container is the ordinary galvanized wash tub which must be painted on the inside with either hot asphalt, acid proof paint or a good house paint to prevent rusting. Any metal container should be so painted. A wooden container should be waterproofed with paraffin or good house paint. The tub or box should be set off the ground on dusted or creosoted blocks which aid in keeping out ants which may come to feed; boxes also supported to prevent worms from escaping into the ground.

A tub 2 feet across and 10 inches deep produces about 3,000 to 5,000 worms per year. Prepare the bed by filling it loosely with rich clay loam or porous clay mixed with rotting leaves or other organic matter to a depth of about 2 inches from the top of the container. Now, next comes the critical step. Moisten or dampen the soil—but no more than dampen it. Do not soak the bed as the soil will sour and the worms will die almost overnight. During hot weather keep a moistened tow sack or burlap bag over the bed. Dishwater can be used to dampen the soil.

Beg, borrow or dig about 100 adult fishing worms (night crawlers, red worms) and introduce them to their new home. They will set up housekeeping and within 2 to 4 months the young will be large enough to harvest for bait. Worms reach maturity in about 6 months. The common earthworm or night crawler reaches a length of 10 inches; the small red species found in manure piles grow only to 3½ inches.

It is advisable to supplement the food supply furnished through the rotting leaves. There are many menus in use today and some of the most convenient are: powdered milk sprinkled on the surface, or corn meal fed the same way; a water-thin solution of chicken mash poured over the soil; a mixture of one pound of corn meal and one-half pound of lard or cheap cooking fat mixed into the soil every two weeks or so is suitable for the tub size described above. It is a good plan to feed each time more water is added, that is every two weeks. When harvesting the worms for bait, don't throw away the soil as there will be egg capsules ready to develop into more worms.

In addition to saying "Good Luck," if you are going to furnish your friends with bait you had better plan on two tubs.

Conservation . . . B. S. A.

Activities dealing with conservation of our natural resources will receive major emphasis in the national program of the Boy Scouts of America during 1951, the kick-off coming during Scout Anniversary Week, February 6-12.

Scout troops and explorer units will be encouraged to develop a conservation program beginning with an exhibit, demonstration, or display during Scout Week. The purpose of the projects will be to point out local conservation problems and suggest remedies that may be undertaken by anyone in the community.

Your response to and participation in the problems scouts recognize will do much toward making this the outstanding year of accomplishment in scouting history.

The North Carolina Wildlife Resources Commission is more than willing to assist scouts, scouters and other citizens of the community in making this year the greatest.

The way to begin is to learn and put into practice the Conservation Pledge.

I GIVE MY PLEDGE AS AN AMERICAN TO SAVE AND FAITHFULLY TO DEFEND FROM WASTE THE NATURAL RESOURCES OF MY COUNTRY—ITS SOIL AND MINERALS, ITS FORESTS, WATERS, AND WILDLIFE.

Carolina Schools In Wildlife Study

By LUNETTE BARBER
Wildlife Education Representative

WHO taught you that the majority of birds migrate by night, or that the bat is a mammal that flies, or that the male bass guards the eggs until they are hatched? Perhaps it was your school teacher. Many teachers in North Carolina are doing just that. Educators are beginning to realize that promoting conservation education in the public schools is one of the most important needs at the present time, and they are doing much work along that line. At no time in history have we been more dependent upon our natural resources for defense of our country than we are today and it is most gratifying to know that this work is being done and with very little additional effort. For the purpose of teaching wildlife conservation Junior Wildlife Clubs are organized in the schools. The club work is carried out as an activity and correlated with practically every subject taught, and at the same time much is learned about North Carolina and its natural resources.

Photo by Win Donat

Students at Lake Forest school examine and study the exhibits of a wildlife project.

Lake Forest School Has Full Wildlife Program

The Lake Forest School, Wilmington, North Carolina, has Junior Wildlife Clubs throughout the school. Under the direction of the principal, Mrs. Manley Williams, the school is well known and recognized for its alert, progressive, varied activities and work.

When asked about promoting wildlife study in the school through Junior Wildlife Clubs, Mrs. Williams replied, "Because our very existence depends upon our natural resources, teaching conservation of them is one of the most important duties we school people have today. We cannot put conservation into practice unless we have first learned about the soil, water, forest, and wildlife, and I think the easiest and most interesting way that it can be done is to begin with wildlife. Children easily learn about birds, mammals, and fish because of endless interest—color, size, sound, motion, habits, and history, and then too the younger they begin the subject the better. Science study is most important in the first three grades, and wildlife is natural science.

"And, too, here at Lake Forest School, we think we are most fortunate because we are near Greenfield Lake, the Atlantic Ocean and the Flyway for our bird study."

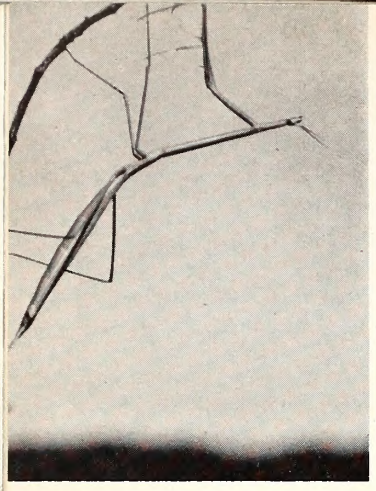
So with Mrs. Williams enthusiasm and outstanding ability, and with the help of an efficient faculty, a wide awake program is carried out in the school. Sixteen Junior Wildlife Clubs have been organized with an enrollment of 615 pupils. Meetings are held regularly and the children are learning much about wildlife as well as Parliamentary procedure and getting practice in oral English.

After a careful study of wildlife at Greenfield Lake, which is only a few blocks from the school, plans are under way for a group from the school to take a trip to Lake Mattamuskeet for further study. Also programs given by specialists for promoting more interest and teaching conservation practices have been planned for the remainder of the school term.

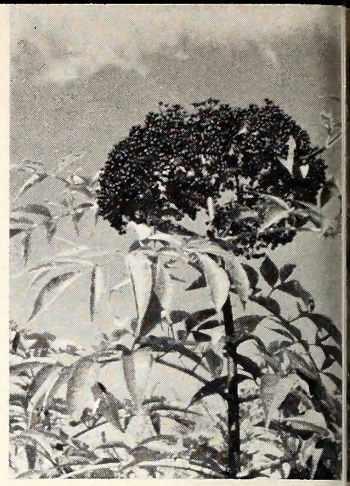
Nature Photo Quiz

Photos By Jack Dermid

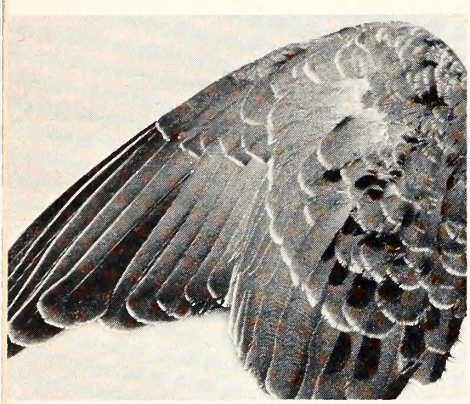
(Answers on Page 22)



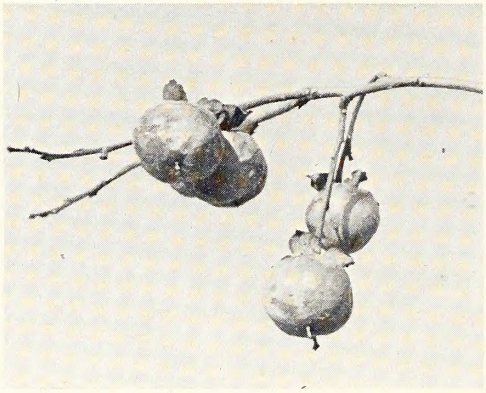
1. Large predator of the insect world.



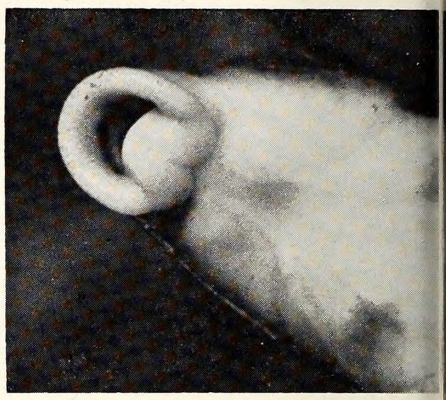
2. Food for wildlife. Ingredient for wine.



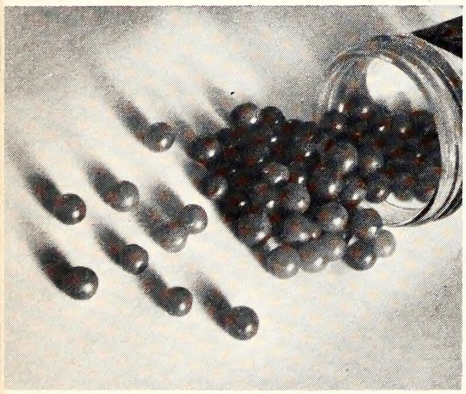
3. Wing of fast-flying game bird.



4. Opossums are very fond of these fruits.

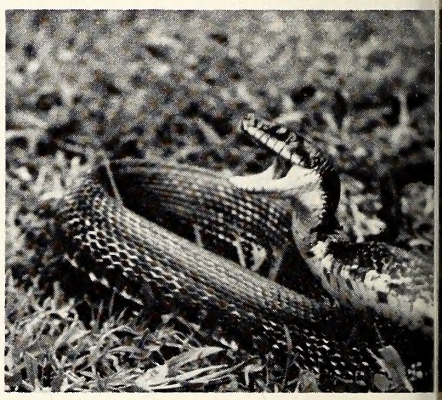


5. It's the mouth of a fish.



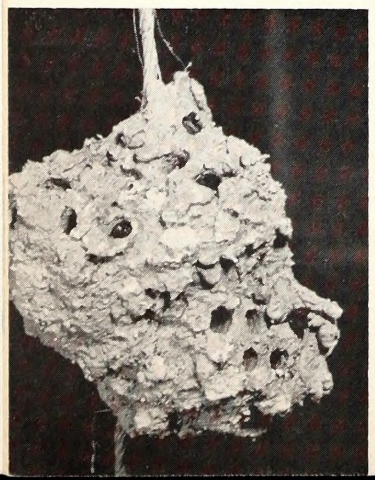
6. Not cherries, but bait for trout.

7. Parasitic plant used for Christmas decorations.



8. Harmless black snake with white underparts.

9. Nest of mud with many chambers.



WRITE ANSWERS HERE

90% = EXCELLENT
80% = GOOD
70% = FAIR
60% = POOR

1 ..... 6 .....

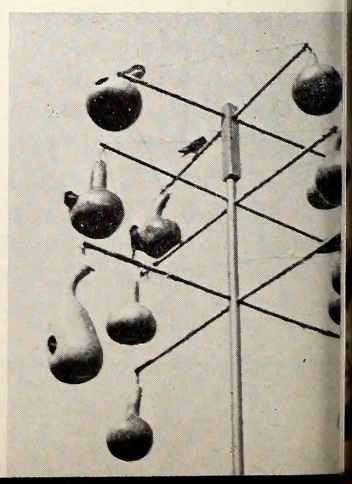
2 ..... 7 .....

3 ..... 8 .....

4 ..... 9 .....

5 ..... 10 .....

10. Birds that like gourds for houses.



GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

NOTE TO TEACHERS

The values of our wildlife resources have been described as esthetic, economic, and sporting in nature. I should like to suggest to teachers the use of wildlife as a teaching aid. An interview with Miss Gertrude Styron, Supervisor of Education in the Pender County schools, discloses the progress made by a special group of "slow" pupils after a year's work on a wildlife project.

The group contained twenty-one children whose retardation ranged from one to three years. Lack of the ability to read was a common characteristic and the subsequent under-development destined many of these children to fall by the wayside because of the absence of especially trained teachers and facilities for working with abnormal pupils.

The familiar birds, animals, and fish were used in the wildlife approach and the response was immediate. The primary interest thus developed from pictures, mounted specimens and observation was led to books and charts especially designed to create interest in words related to the subject.

Much more could be said here about the class and its progress, but space is limited. The significant thing is that tests made at the end of the year, compared with those made at the beginning, show the average for the group to be six months advance. While this might not seem impressive, it is important that the greatest improvement was shown by the pupils with the greatest handicap and definite improvement was made by all members of the group! By end end of the year, reading, English, and geography had been added to the list of activities.

It is difficult to resist the appeal of our wild animals, birds and fish—we have often suggested that this natural interest be developed and led to better sportsmanship and citizenship. What better way exists than through the education of tomorrow's citizens?—W.D.

From Mr. C. Z. Flack, Jr., Forest City, N. C.:

"Today I caught a rabbit in one of my boxes, and after killing it and starting to skin it, I found that it was literally covered with fleas. I am wondering if it would have been safe to eat the rabbit or if this condition has any particular significance. As a matter of fact, I completed skinning the rabbit and found it apparently in good condition. However, I did destroy it.

"This rabbit was caught near a residential section and within 100 yards of a residence with chickens and hogs. I merely give you this information for what it may be worth.

"I shall appreciate greatly hearing from you."

There seems to be no apparent answer to the flea infestation mentioned except that a particularly heavy infestation occurs at times on any animal subject to these parasites. At any rate, this condition should not ruin the meat for human consumption provided that it is well cooked.

From Mr. Roy Stuart, High Point, N. C.:

"I was wondering if you could give me some information on places to go hunting and how to go about getting a permit to hunt. Most all of the land in this part of the state has been posted. Those of us who live in the city do not have much of a place to hunt. Any information concerning my problem will be greatly appreciated."

It is true that posted signs are going up in increasing numbers and it is just as true that the "Hunting By Permission Only" posters distributed by the Wildlife Commission are doing much to retard the erection of land posters. Regardless of the type of poster, our sincerest advice to any sportsman is to present himself before the landowner and ask permission to hunt, whether the land is posted or not. The practice of common civility and courtesy will go far in advancing the sportsman's interests. The general tendancy is to accept all land as open where hunting and fishing are concerned, and we must remind ourselves that absolute control of private land lies with the owner. The relations between the sportsman and the landowners must be on a

give and take basis and the sooner this is realized the more sport we will have.

From Mr. M. C. Gibson, Elizabethtown, N. C.:

"As well as I remember, I heard something on the radio the other day stating there was some kind of disease in wild geese this year.

"I will appreciate any information you have on the above as I plan to go goose hunting early in December this year, and would like to get this information."

There has been a serious problem centered about the geese using the Pea Island Refuge on the Outer Banks. As many of these birds have been found dead and near dead in the past, it was believed that the disease from which they were suffering was contracted on the Refuge, and it is almost certain that very few of them affected were able to get very far from the Refuge area. I should not be too concerned about the health of any geese killed along the North Carolina coast except, of course, such individuals as may come into the decoys and sit and appear lethargic or lacking in wildness and alertness, as it is always possible that such geese have been suffering from previous wounds or taking a harmful amount of lead shot in their gizzards.

From Mr. P. G. Wall, Sr., Pilot Mountain, N. C.:

"I have just read the item written by Mr. F. T. H. of Bennettsville, S. C., asking how to prepare a carp for a good meal. I happen to be one of the men that has a carp pond not too far from Winston-Salem, N. C.—2½ miles west of Pilot Mountain on Highway 268, better known as Wall's River Drive Lake. It has 2½ acres covered with water 18 feet deep in the center of the lake and 3 feet average at the banks. This lake is fed by two cold spring branches that have several springs running into each branch which give plenty of clear running water in this lake. I have more than 6,000 pounds of White and Gray Carp, and 1,700 pounds or more of Yellow and Blue Channel Catfish. What type and how much feed should I use each week, since I have closed for the winter months? I feel that at times I did not feed my fish too well. Each time I received a load of fish I fed them one bushel of shelled corn, boiled four hours and then let set 12 hours or more to soften, then I spread it over the lake. So far I have had good results; however, since I closed the lake I try to feed them about the same amount each week. I want to know if you think this is sufficient. If different food is necessary, what would you recommend?

"Now, about preparing a carp for a good wholesome meal. It is best to dress the fish as soon as possible after taking it from the water, keeping the fish alive in water, if possible, until you are ready to dress it. The first step in dressing a carp is to cut its head off and then let bleed well, and then dress as any other fish. Next put the fish in an earthernware vessel, with enough water to barely cover the fish, then add 1 teaspoon of salt for each pound of fish, and let set for two to three hours. Next pour off mixture of salt and water and rinse fish in cold water and salt lightly, but add no water. Then let set in container two or three hours or more. Now the fish are ready to cook—roll in a batter of equal parts of meal and flour. To increase the flavor, cook in plenty of fat from country bacon or fat country ham. Have it piping hot, drop the fish in, turn the fish over only one time, and eat while hot. It is as delicious as any fish—the writer thinks."

Mr. Cornell, Chief of our Fish Division, makes the following suggestions for a carp diet: Corn should not comprise more than fifty per cent of the total diet and the balance should consist of rye, barley, ground soya beans, with barley as the preferred item. It seems that corn alone makes the flesh soft and affects the taste. It is important that the food be placed in the same spots to avoid waste, and more important that over-feeding be avoided. If possible to determine the amount of food required, this amount should be reduced as slightly underfed fish will maintain a better condition. Also fish eat only about one third as much in winter as in summer.

You may remember that Thanksgiving Day was Wildlife Enforcement Day and every male member of the Wildlife Commission staff spent the day in the field. One of the many reactions comes from Tom Rollins of Sanford, Enforcement Supervisor for District 5:

"About the request for information concerning the activity and comments on Law Enforcement Day in North Carolina by the male employees of the Wildlife Commission, this is to inform you that they run from 'Too d..... many game wardens in the field' to 'you boys are doing a swell job' and 'where did so many of you fellows come from.'

"Prosecution reports indicate in this District a slight decrease in number of arrests for Thanksgiving Day despite the extra help we had, which was greatly appreciated."

ANSWERS TO NATURE PHOTO QUIZ

1. Praying mantis.
2. Elderberry.
3. Wing of mourning dove. White edges on feathers indicate a young bird.
4. Persimmons.
5. Mouth of a sucker, a bottom feeding fish.
6. Salmon eggs.
7. Mistletoe.
8. Black chicken snake.
9. Nest of mud dauber.
10. Purple martins.

RETRIEVER IN ACTION

Honey Baby picked up a Canada goose, moved parallel to the blind a few steps, then turned to bring the goose in (below). Although small for a Chesapeake and young, weighing about fifty pounds and only two years old, Honey Baby did not hesitate to tackle the large bird. The average weight of Chesapeakes is between 65 and 75 pounds. Their eyes are yellow. Their coats range from brown to dead grass in color. Abnormally large feet are a great aid to the breed for traversing marshy places.

The Chesapeake Bay retriever has the reputation of being superior to all breeds in its ability to withstand icy waters and zero temperatures. Four qualities combine to make it a good waterfowl retriever. 1. It loves water, often leaping far into it instead of wading in. 2. Its oily coat is hard to wet. The dense undercoat is covered by heavy, wavy guard hairs. 3. It has great strength and endurance. 4. Its memory is good. The Chesapeake has been known to mark down six fallen ducks at one time.

Honey Baby retrieved a mallard hen. There is no open water surrounding the blind, but acres of dense marsh vegetation often make it hard to find crippled birds. Then Honey Baby shows his real worth. Biologists have estimated that for every duck bagged another is left wounded to die. About fifteen million birds are wasted during every gunning season. The hunter that uses a retriever seldom loses a bird. It is good conservation, then, to take a Chesapeake or other retriever along when hunting. Besides, dogs mean more enjoyment.

Photos by Jack Dermid

ARE THESE YOUR PETS

Thousands of nests and young birds and animals will be destroyed on the ground this spring by self-hunting pets

You won't find this game in the field next season

About 50% of next season's deer crop on one Wildlife Management Area was destroyed last spring by packs of self-hunting dogs — Does with young and fawns are particularly easy prey — This loss occurs all over the state

Our responsibility to our Wildlife lasts the year 'round — *Let's do something about it ...*

KEEP PETS UP THIS SPRING

Win Donat

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Wildlife

IN NORTH CAROLINA

TEN CENTS MARCH 1951

Photo by Jack Dermid

EFFICIENT "RAT TRAP"

A young great horned owl clutches a Norway or barn rat firmly in its talons. The rat was one of many brought to the nest by parent owls. Hawks and owls help keep harmful rodent populations in check, and their indiscriminate slaughter interferes with the balance of nature.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

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Governor

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March 1951 Vol. XV, No. 3

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
JACK DERMID, Managing Editor
MARTY MABRY, Circulation

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COVER

Win Donat combined the portraits of two popular hunting dogs, the English setter and the pointer, into a single oil painting.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

★ ★ ★

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The pintail drake in full winter plumage is a bird of exquisite beauty. The puddle ducks as a group are more highly colored than the diving ducks, and their iridescent specula are an aid to identification.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-sixth of a Series on The Wildlife Species of North Carolina

THE PUDDLE DUCKS

By ROD AMUNDSON

Photos By Fish and Wildlife Service

HISTORY

THE term "puddle duck" is applied rather loosely to a group of wild ducks which habitually feed in shallow water by dabbling and tipping up their tails with their heads submerged so that only the posterior shows above the water. Like the diving ducks and wild geese, puddle ducks have passed an era of unbelievable abundance to a point dangerously near extinction, and finally, in recent years, have begun the slow, difficult climb toward moderate abundance. In total number, puddle ducks far exceed the divers, and are much more widely distributed throughout the North American continent.

Included in the puddle ducks which visit or reside in North Carolina are: Mallard, Black Duck, Gadwall, Baldpate, Pintail, Shoveler, Blue-Winged Teal, Green-Winged Teal and Wood Duck. North Carolina diving ducks are: Redhead; Canvasback, Ring-Necked Duck, Greater Scaup, Lesser Scaup, American Golden-Eye, Bufflehead, Old Squaw, Surf Scoter, American Scoter, and White-Winged Scoter. In addition to the ducks mentioned, there may be occasional visitors of other species in both groups.

A third "group" of ducks contains but one species, the perky, tilt-tailed little ruddy duck. Where the ruddy duck group may lack in number of species, it does not lack for common names. Raymond Camp's *Sportman's Encyclopedia* lists at least one hundred common names for the ruddy duck. A fourth group of ducks, the mergansers of fish ducks, includes the American, Hooded, and Red-Breasted Mergansers. These customarily dive or swim under water in pursuit of food, and differ from ordinary ducks by the long, cylinderical beaks with pronounced tooth-like appendages.

CHARACTERISTICS

Where the diving ducks have a distinct flap or paddle on the hind toe, puddlers have the hind toe comparatively undeveloped. Puddlers usually have broader, flatter tails, and highly colored specula or beauty spots on the wings. The bills of puddle ducks are generally broader and flatter and to fly they can take off almost vertically from the water.

RANGE AND DISTRIBUTION

Besides being more numerous than diving ducks, puddlers are more widely distributed. The common

mallard—the most numerous and best known of wild ducks—may be found in all but the northern and southern extremes of North America, is known throughout the world and is probably most abundant in Asia where it nests in northern marshes and spends much time in Asiatic rice paddies.

Since the mallard is so numerous and popular, let us use it as an example in describing the activities of the puddle duck group. It is one of the largest of wild ducks, with both males and females averaging about three pounds. Once a full-grown mallard drake has been seen in his nuptial plumage, he will never be mistaken for another species. His massive head is a deep, iridescent green, the bill an olive color, and he wears a snowy white collar around the base of his neck, separating the green of the head from the russet breast and the buff back feathers. The under side of the body is an off-white or gray, and the wing coverts a reticulate gray-buff. The tail coverts are iridescent purple as is also the under side of the tail. At least two of the tail feathers sport a jaunty curl. The wing speculum is a rich purple-blue, with a white margin fore and aft. The feet are a brilliant orange.

The female mallard lacks the gay colors of the drake, but retains the brilliant speculum and the orange colored feet. In June or July the drakes begin to moult, and during the summer months are easily mistaken for females. In the fall they regain their brilliant colors.

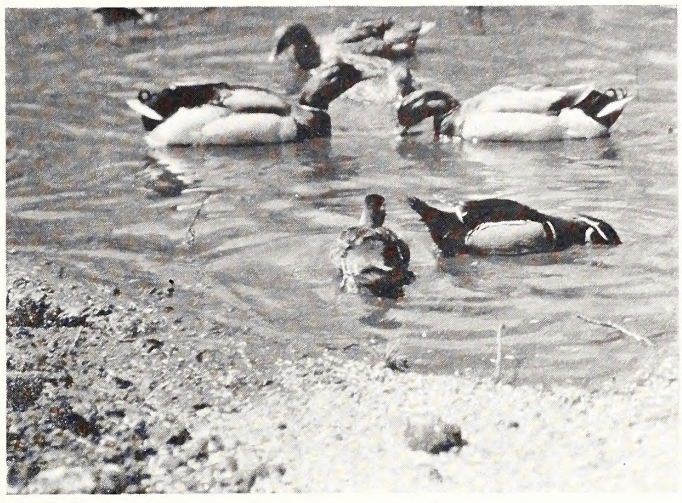
BREEDING HABITS

Where diving ducks prefer to build their nests in or over water, puddle ducks nest on the shore, some (the wood duck especially) nest in trees. The mallard nest is usually in a small depression near the edge of a marsh or grassy pond, lined with dry vegetation and down from the female's breast. Although mallard nests are usually found within a few yards from water, they have been found a measured mile from the nearest water, and sometimes have been found in trees.

The courtship of mallards is interesting to watch. The drakes do considerable preening, fluffing of feathers, neck arching, ducking and bobbing, and giving vent to low "Queep! Queep! Kreep!" noises which may be echoed by the females.

In courtship flight several drakes may follow a single duck in close pursuit until she finally choose a mate and flies off with him.

From seven to twelve or fourteen eggs are laid, varying in color from dull gray to olive buff or gray-blue. They are incubated for about 28 days, and the young are precocious from the moment of hatching. Where the nest has been located quite some distance from water, the mother bird starts her brood on the way to water as soon as all the eggs are hatched. On the Valentine Lakes Migratory Waterfowl Refuge in Nebraska a mallard nest was found exactly one mile from the nearest sand-



Feeding mallards and wood ducks. The "tipplers" characteristically feed in shallow water.

hill lake. The eggs had hatched, and tracks in the dune sand indicated that the mother duck was successful in getting her brood to water through the hot dune sand, yucca, cactus, and prairie grass. Since the weather was hot and dry at the time, the long exodus must have been made at night.

Young mallards feed voraciously on small insects and some green vegetable matter, and by the time they are ten weeks old they can fly. Male mallards do not attain the regal drake plumage until the second year.

FOOD HABITS

The diet of mallards consists almost entirely of vegetable matter, although they feed abundantly on mosquito larvae, small snails, and other small aquatic life during the summer season. The southward flight begins soon after the grain harvest in their native nesting grounds, and as the birds go south they visit grainfields in huge flocks, fattening on corn and wheat as the migration progresses. I have shot mallards when they plopped down on the ice of a frozen pond and spewed shelled corn all over the ice from their gorged gullets. This liking

Thousands of pintails fill the air—a sight that duck hunters dream about!

This mallard's nest is lined with down from the female's own breast. Puddle ducks usually nest on dry ground.

for grain and seeds undoubtedly has an effect on the wonderful flavor of roast mallard.

In some areas of the Midwest where mallards migrate in abundance before the corn is harvested, huge flocks of these birds make away with an important amount of corn from the fields.

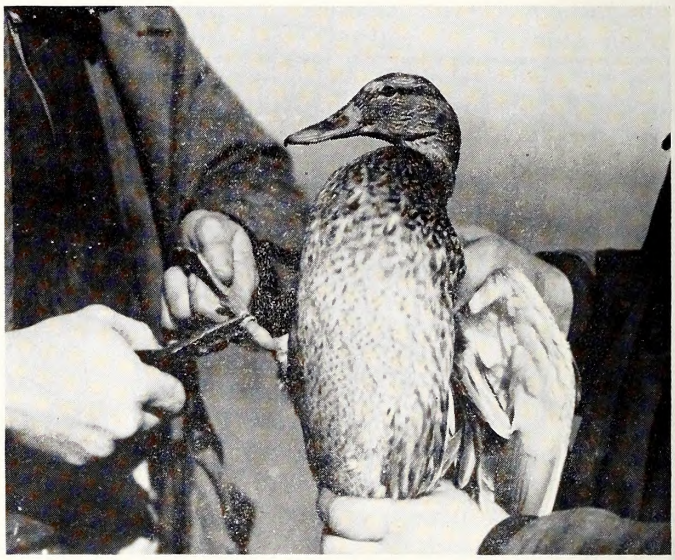
MANAGEMENT

As has already been pointed out in a discussion of diving ducks, the management of puddle ducks resolves to three important factors: adequate nesting grounds, adequate wintering grounds, and stringent protection under law.

The federal government, with the cooperation of state game departments, has done a magnificant job of bringing about an important increase in the total waterfowl population of this country, but the job is far from finished. At the same time energy is being expended to increase waterfowl, the number of waterfowl hunters increases each year. For a number of years it has been necessary to greatly curtail waterfowl bag limits. Where once market hunters took thousands of birds in a single day, the sportsman must now try to be content with three or four.

Laws and regulations governing the taking of waterfowl are set by the federal government. Such federal control is made necessary by the migratory habits of the birds. Were the control of shooting left to individual states, there would be no means whatever of regulating the kill according to the number of birds available. Such a condition would soon mean the end of waterfowl shooting as we know it now.

In former years, waterfowl seasons were set according to lattitudinal zones; i. e., the season progressed from north to south with the advance of fall and the general migration. This method has been replaced by a more equitable system. Although



Thousands of ducks, like this female mallard, have been banded in an effort to discover the patterns of migration.

there is still a progression of opening dates for the season from north to south, it has been recently realized that there were important differences in the numbers of waterfowl in the four major flyways. For example, in some years hatching may be unusually successful in the nesting areas which feed birds into the central flyway, and for that reason hunters in that flyway are granted a more liberal bag than those in less fortunate regions.

The job of saving enough birds for breeding stock on one hand, and trying to satisfy the demands of wildfowlers on the other, is difficult indeed. The United States Fish and Wildlife Service (the agency responsible for waterfowl management) maintains a staff of field personnel throughout the year for the sole purpose of keeping account of total waterfowl populations. During the spring and summer surveys of the northern nesting grounds are conducted in an effort to determine the number of birds

• CONTINUED ON PAGE 19 •

The female leads her brood from the nest to water soon after all the eggs have hatched.

BIG DAMS IN THE PIEDMONT

By R. W. ESCHMEYER

(Editor's note: Dr. R. W. Eschmeyer is a nationally known fish biologist and the executive vice-president of the Sport Fishing Institute of Washington, D. C. The Sport Fishing Institute is a non-profit organization devoted to the improvement of sport fishing everywhere. At the invitation of the Wildlife Resources Commission, Dr. Eschmeyer visited the power reservoirs on the Catawba and Yadkin rivers so that he might advise the Commission on the most desirable management practices to establish.)

ABOUT one person in eight is a fisherman. These figures are for the country as a whole. But they don't apply to the Piedmont section of North Carolina. Down there nearly everybody fishes. At least that's the impression you get from talking with the folks.

The Piedmont not only has thousands of anglers, it also has thousands of acres of fishing water. Sounds like an ideal situation. It would be ideal, if those fishing waters did a better job of producing fish.

The big waters are power reservoirs on the Catawba and the Yadkin. We once believed that reservoirs couldn't provide good fishing. Many of them don't. Some impoundments, like the San Diego water supply lakes, and some TVA impoundments, are well known for their fishing. What about the reservoirs in the Piedmont?

The Wildlife Resources Commission has been actively interested in these waters. It hopes to make a more thorough study of several of them when the Dingell Bill money becomes available. It has introduced the walleye in the hopes that this desirable fish will do well. The chances are that the walleye will thrive in several of the waters, but possibly not in the others.

The Commission is doing everything it can to give you better fishing in the impoundments on the two rivers. There are two really big problems, though, which the Commission can't solve. The farmers are gradually taking care of one of them. The other is in the hands of the men who push the buttons in the power plants. The two big problems are silt and water-level fluctuation.

When soil erodes from the farms and into the streams, the farmer and the fisherman both suffer. As the topsoil washes away, the land produces less corn and fewer livestock. In the stream the shifting silt covers the bottom, destroying the insect life. The muddy water shuts out the light and destroys the all-important microscopic plant life as well.

These plants, and the microscopic animals, are the food of small fish, insects, and crayfish which are eaten by the bigger fish. They are as important to our aquatic "pastures" as grass is to the land pastures.

The mud interferes in another way. The fish which you and I prefer to catch feed by sight. They can't see well in muddy water. Some bottom-feeding fish, like the carp, don't need the light. These fish actually contribute to the muddiness by keeping the bottom "worked up" as they strain the food from the bottom mud.

In several of the reservoirs in the area the water is usually clear. These also support the most game fish, and give the best fishing. On these several waters, siltation isn't an important problem.

Sportsmen can expect conditions to improve on the other reservoirs too. The farmers are changing their ways. They are taking important steps aimed at keeping the soil on the land, where it is needed. In some areas terracing and contour plowing are the rule now, not the exception that they were a dozen years ago. As the farmers keep more and more of the soil on the land, less will erode into the streams. Clearer water will mean more food and better living conditions for the game fish.

The carp and other rough fish seem to spawn successfully regardless of drawdown. Crappie spawn fairly deep and manage to reproduce if the fluctuations are not too severe. The bass and bluegills, though, usually spawn in only about three feet of water, and they may nest in only a foot or two. Even a very limited drawdown may destroy the spawn. Repeated drawdown at spawning time will wipe out the future crop of fish.

The dams were built for a specific purpose, and that purpose wasn't fishing. They must be operated mainly for their intended purpose. Of course, power companies, like other industries, recognize the importance of "good will." They realize, too, that fishing is assuming greater significance. It's the favorite form of mental relaxation for millions of people—at

CONTINUED ON PAGE 17

The twin lens reflex is the best single type of camera for the sportsman. It has two identical lenses coupled together, which enables the photographer to get on film exactly what is seen in the ground glass viewfinder. Below. Either the waist-level or the eye-level viewfinder can be used.

"WHAT camera should I buy? I'm a hunter and fisherman, and I would like to keep a photographic record of my days spent in the field. I'd like a camera with which I can take consistently good pictures, yet one which is simple and economical to operate."

As a professional wildlife photographer, I have been asked about cameras on many occassions. Here is my answer:

There is no single camera capable of handling *all* photographic situations; so before naming the best type camera for you, a sportsman, let's summarize the kinds of pictures you will likely shoot. You will want snapshots of your trophies, ranging from a string of bluegills to a ten-point buck, and both candid and posed photos of your companions. Hunting dogs will be a favorite subject. To complete the story of your outings, you will need scenic pictures of fishing waters or hunting terrain, action shots, wildlife shots, and an occassional flash picture inside or at night. You will want to use your camera on cloudy as well as sunny days. Since most of your subjects fall in the general outdoor catagory, a single camera will be adequate, providing, of course, you learn how to use it.

The twin lens reflex is the camera for the sportsman. It is the nearest approach on the market to the theoretical all-purpose camera that is portable enough for the field and easy to operate. Without a doubt, the average person can take consistantly better pictures with it than with any other type camera. Its only disadvantage, if you can call it a disadvantage, is its size. It is slightly larger and more bulky than other cameras using the equivalent film.

The name, twin lens reflex, is very descriptive, for this type camera has two lenses, one above the other. Both lenses are exactly alike. The lower one projects the image to be photographed on the film, while the top one projects the image on the viewing ground glass in the top of the camera by means of a slanting mirrow. Since the identical lenses are coupled together, you get on film exactly what you see in the ground glass. If an object is in focus in the viewer, it is also in focus on the film.

The camera is shaped like a rectangular box about 5½ inches high with the viewing hood closed, 3¾ inches wide, and 3¾ inches deep. The four-sided viewfinder hood increases the height by 2½ inches when the camera is in use. The hood provides shade so that a clear image can be seen on the ground glass. On most models, knobs for focusing and transporting the film are placed on the side. The average model weighs approximately two pounds.

Since the twin lens reflex is a type of camera, it is made by many manufacturers. The price of the better models and brands ranges between fifty and three hundred dollars, according to the refinements, quality of the lenses, and type of shutter present.

CAMERA

for the sportsmen

By Jack Dermid

Photos By the Author

It is not the purpose of this article to advertise a particular twin lens reflex, but some of the more popular brands can be listed: Ansco Reflex, Argoflex, Ciro-flex, Ikoflex, Kodak Reflex, Rolleicord, and Rolleiflex. At any rate, there is a good twin lens reflex available to fit the pocket book of cost serious camera fans. Many cost less than good folding cameras or 35 mm miniatures.

The advantages of using a twin lens reflex for general outdoor black and white photography are many. Let's analyze a few of them.

FILM SIZE AND ECONOMY

If many pictures are to be made for personal use, economy is an important point to consider. The twin lens reflex takes twelve exposures on 120 or 620 roll film, each being 2¼ x 2¼ inches. Standard folding cameras using the same film take only eight pictures to the roll. You may be interested in the 35 mm or miniature camera because of its compactness and small size. The cost per negative is less with the twin lens reflex than with the 35 mm camera when the twenty exposure cartridge is used in the latter. At less expense, then, you get a negative over three times larger.

The increased negative area is the real advantage. In black and white photography, it far overshadows any margin the miniature camera may have by its small size. Being only 1 x 1½ inches, the 35 mm negative is too small for making usable contact prints. Enlargements have to be made even for album use. Because the degree of enlargement is great, extreme care must be exercised during film processing if good results are expected—far more care than most photo-finishing establishments will give. Unless you do your own custom developing and enlarging, it is usually best to avoid the 35 mm film size. On the other hand, the 2¼ x 2¼ inch negative is large enough for economical album-size contact prints. With reasonable care in developing, good quality 8 x 10 inch or bigger enlargements can be made.

The largest saving with the twin lens reflex, however, is the high percentage of good photographs per roll of film. The design of the camera takes a lot of the guess work out of picture taking. It puts the subject under your control.

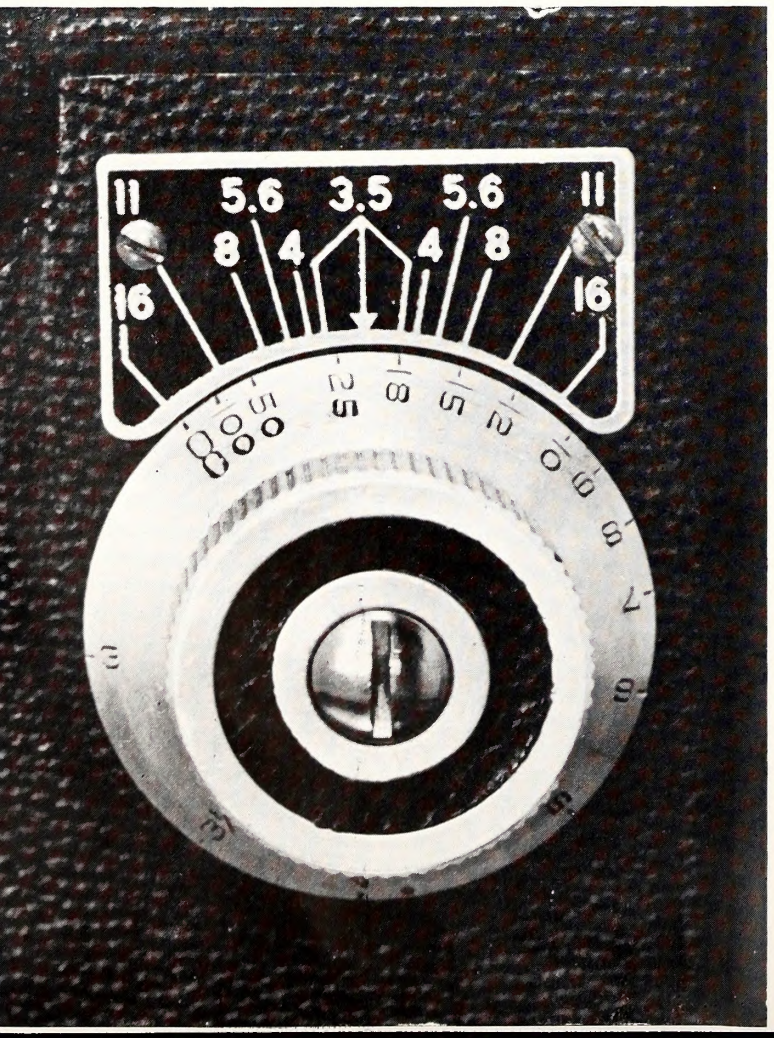
EASE OF OPERATION

There are four important steps in taking a photo: sharp focusing, good framing of the subject in the viewfinder, determining the correct exposure, and selecting the proper shutter speed. The first two steps soon become second nature with the twin lens reflex, for the camera practically does the job for you. It is in focusing and framing that the twin lens reflex shows its superiority. The fundamentals of exposure and setting the shutter are the same for all cameras.

The matching lenses and ground glass viewfinder are the key to the reflex's simplicity of operation. As stated before, you get exactly what you see in the viewfinder on the film. You get an actual size preview of your contact prints. This enables you to avoid mistakes before you make them.

Pictures of pointing dogs are easy with the twin lens reflex. Just focus and shoot.

To get both the hunter and the tower at Lake Mattamuskeet in focus, the depth of field scale, below, was employed. The two sets of figures on the top plate correspond with the f/ stops of the lens, while the figures on the knob indicate distance. Thus at f/16 every object between about twelve feet and infinity will be in focus. See text for further explanation.



One of the most common faults with many snapshots is poor focus. The reason is simple. Most people cannot estimate distances accurately, and you must be accurate when shooting closeups or shooting with the lens opened wide in dim light. It's hard to tell if your English setter is four or five feet away, or even fifteen or twenty. You don't have to waste film or time measuring distances with a twin lens reflex. Just focus on the ground glass. For extremely critical focusing, a magnifying glass is mounted inside the viewfinder hood.

Ground glass focusing will eliminate other picture errors. If the sun is shining into the lens, you can see it. Tilted horizons can be leveled instantly. Blurred objects in the foreground, such as weed tops and tree limbs, may be spotted and removed. Distracting backgrounds or trees "sprouting" from your subject's head can be easily avoided. These points add up to better picture quality.

Good composition or the pleasing arrangement of subject matter is greatly facilitated by the viewfinder of the reflex. Only through carelessness will you crop off part of your model's body or fail to show the center of interest well-framed. In contrast, the optical and open viewfinders of certain cameras are not so easy to use. Frequently you get more on the film than you see, and parallax may be so great that it is almost impossible to get good framing in closeups. Some optical finders reduce the scene being photographed to such a small size that it is actually hard to see.

Most twin lens reflex cameras have two viewfinders. The lens ground glass system has been described. It is used at waist or chest level. If a higher viewpoint is required or if fast action is to be photographed, the camera can be held at eye level by modifying the hood that shields the ground glass, Merely push in the front portion, and an open viewfinder is ready for use. However, it's always best to use the ground glass for closeups.

VARIED USES

The twin lens reflex is not merely a snapshot camera for making family portraits in the garden. It is a precision instrument, capable of doing many other photographic tasks. A good reflex is equipped with a fast coated lens, f/4.5 or faster. The modern lens coating increases image definition and reduces flare from stray light. Fast lenses facilitate photography under adverse lighting conditions, such as in the shade or on dull cloudy days. They are also an aid for taking action shots. If the shutter speed is increased, the lens must be opened wider if good exposure is to be maintained. The lens opening and the shutter work together in regulating the amount of light reaching the film.

Some twin lens reflex cameras have shutters with speeds ranging from one second to 1/500 second, in addition to time and bulb. Since most subjects require a shutter speed of only 1/50 or 1/100 se-

cond, it is not essential to have the entire selection. A range between 1/10 and 1/200 second will be usually adequate, and less expensive to acquire. You can stop a lot of motion at 1/200 second. The slow shutter speeds are for weak light photography. If conditions permit, always shoot at 1/50 second or faster to stop camera movement.

In action photography, the two viewfinders are indispensable. The open one permits following fast action with greater ease, such as a wedge of flying geese or a hunter shooting a game bird on the rise. If action can be anticipated, however, the ground glass should be used for better composition control. For example, say salmon are repeatedly jumping over a certain waterfalls in their migration from the sea to spawn. The camera is focused on the point of most action and held in position. The leaping fish is followed on the ground glass until the peak of the jump is reached. At that instant the shutter is tripped. Another valuable feature of the twin lens reflex is that you can keep an approaching subject constantly in focus by continuous adjustment of the lens. Pictures of your dog retrieving a bobwhite are not difficult if this technique is used.

The fast lens and shutter of the twin lens reflex are suitable for candid shots of your friends. The camera has another advantage in that it does not have to be held at eye level and thus be conspicuous. With a little care, you can take pictures of people without their knowledge by holding the reflex nonchalantly in your lap or by resting it casually on some support.

The depth of field scale on the focusing knob is often a great aid in photography. It shows how much of your proposed picture will be in focus at a certain f/ stop. The wider the lens is opened the smaller the range of focus. Let's apply this principle to a practical problem. A picture is wanted of a hunter holding a pair of geese with the tower at Lake Mattamuskeet in the background. Both subjects should be in good focus. The distance between them is so great that if one is focused sharply the other will be out of focus. Then the depth of field scale is used to indicate what distance to set the focus to show both subjects clearly. When the taking lens of the twin lens reflex is stopped down to f/16 and set at a distance of 25 feet, every object between twelve feet and infinity will be in focus. Thus, the picture problem is not difficult.

ACCESSORIES

The uses of the twin lens reflex may be increased by employing a few accessories. Light filters are frequently useful in outdoor photography. The K2 filter darkens the sky to obtain cloud effects, renders green foilage somewhat lighter, and, by absorbing ultraviolet and some blue-violet light rays, is particularly adaptable for taking distant scenes, mountains, snow and water scenes, and sunsets. Other filters have more specific uses. Panchromatic film should be used with filters in most instances. A sunshade placed over the lens is desirable when shooting toward the light.

For photoflash pictures, a flashgun and a method for synchronizing the flashbulb with the shutter are required. With the twin lens reflex, built-in synchronization is probably the best method. It makes the camera cost a little more, but there are no awkward mechanical synchronizers to worry with or keep in adjustment. All you have to do is to plug in the flashgun and click the shutter at the proper speed.

Since you "get what you see" closeups of people are no problem. Cut off arms and heads can be avoided.

The twin lens reflex can be adapted for making 2 x 2 inch color slides with 828 film. A standard set of bushings for holding the smaller spool in the camera may be purchased, along with masks for both the film and the viewfinder. This arrangement can be recommended for occassional color photography. If the primary purpose is taking color transparencies, a good 35 mm camera with a rangefinder is best for amateur use. It is the most economical size for color film, and the small slides project nicely.

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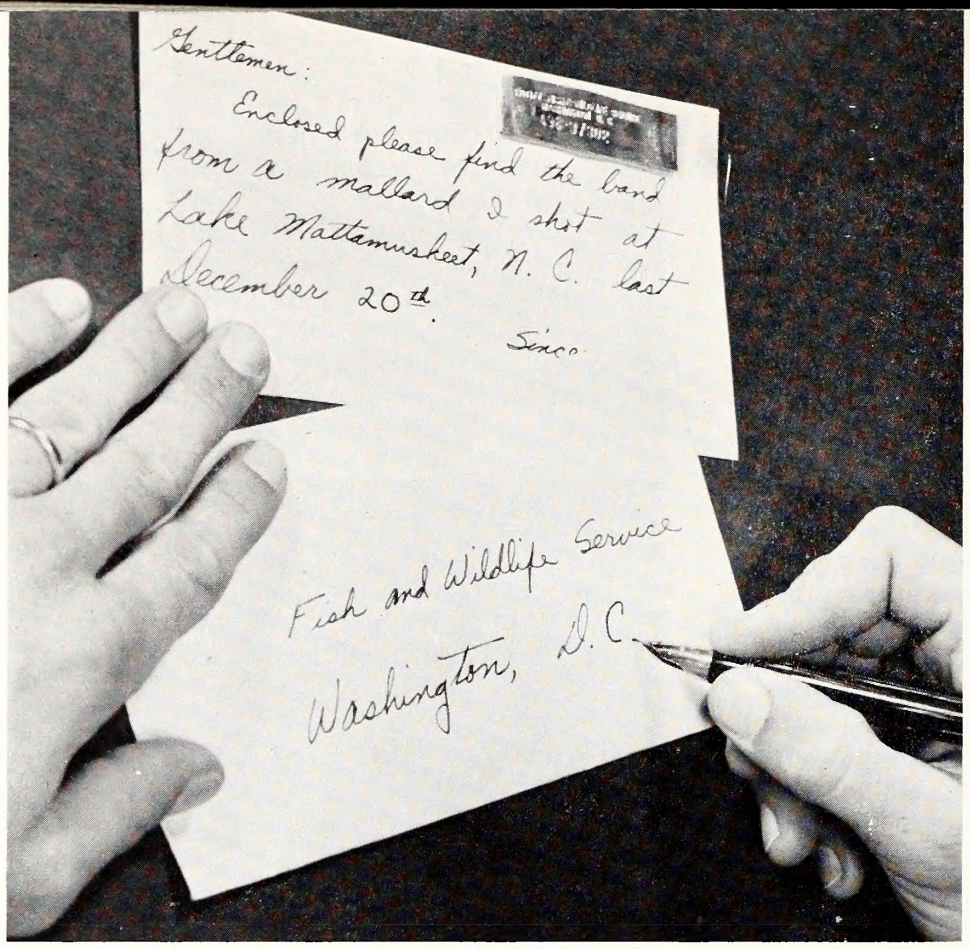


COOPERATE WITH RESEARCH BIOLOGISTS. You can make their jobs of "trouble shooting" for wildlife easier by returning bird bands, answering questionnaires, and helping on special wildlife projects.

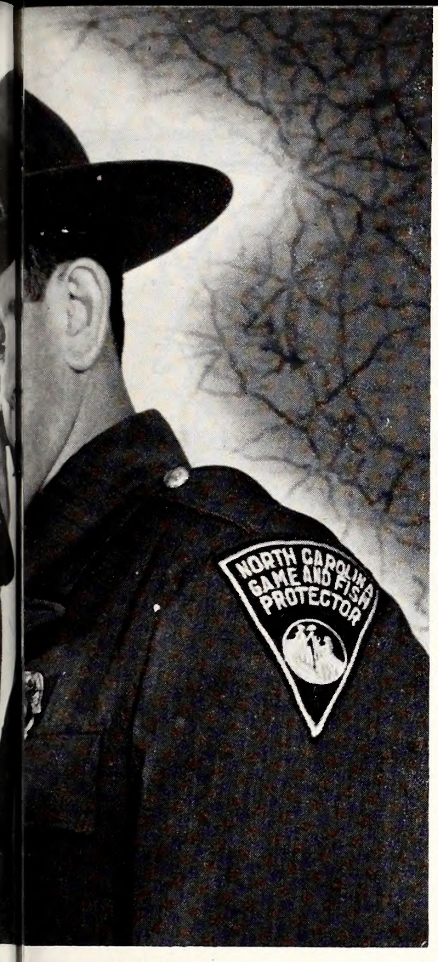
COOPERATE WITH WILDLIFE PROTECTORS. It is often hard to apprehend serious and persistent violators without tips from sportsmen. Remember a protector is stationed in every county to insure fair play.

SIX WAYS TO BETTE

Photos By Jack Dermid

CONSIDER THE LANDOWNER. Farmland is also wildlife land. The farmer is also a game manager. Then it is only right to obtain his permission before hunting and to respect his livestock and property.

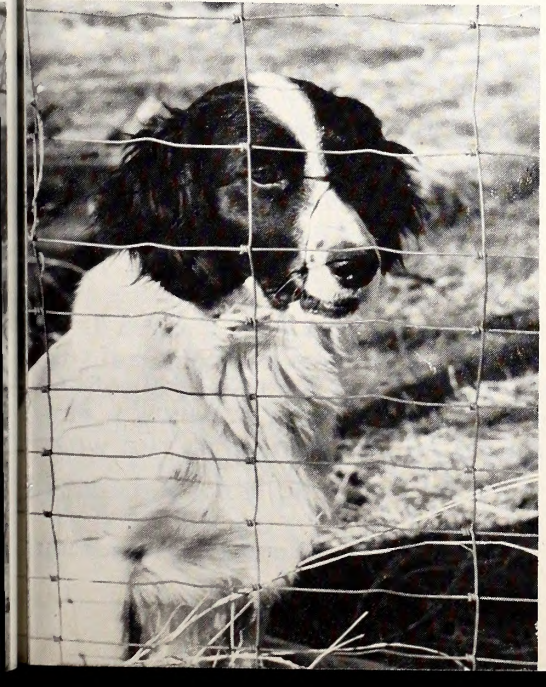
KEEP DOGS PENNED DURING THE BREEDING SEASON. The fall coverts will not teem with quail and rabbits if nests are destroyed in the spring. Free hunting dogs take a terrific toll of wildlife.



/ENT FOREST FIRES. After fire ravages the , there is no place left for wildlife to live—only desolation. So grind out your cigarette butts and your matches in two.

SPORT

DUCT GAME MANAGEMENT PROJECTS. life responds favorably to better living conditions. placing of squirrel nesting boxes and the planting r lespedeza field borders are two sound practices.



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

THE ENGINEERING DIVISION OF THE WILDLIFE RESOURCES COMMISSION HAS RECENTLY COMPLETED REPAIRS TO THE DAM AT WHITE'S MILL POND IN HALIFAX COUNTY. WHITE'S MILL POND IS A FAMOUS FISHING SPOT, AND REPAIRS TO THE DAM WILL INSURE GOOD FISHING IN THE POND FOR SOME TIME TO COME. THE DAM WAS CONSTRUCTED BY THE DIVISION OF GAME AND INLAND FISHERIES, AND BECAME A RESPONSIBILITY OF THE WILDLIFE RESOURCES COMMISSION IN 1947.

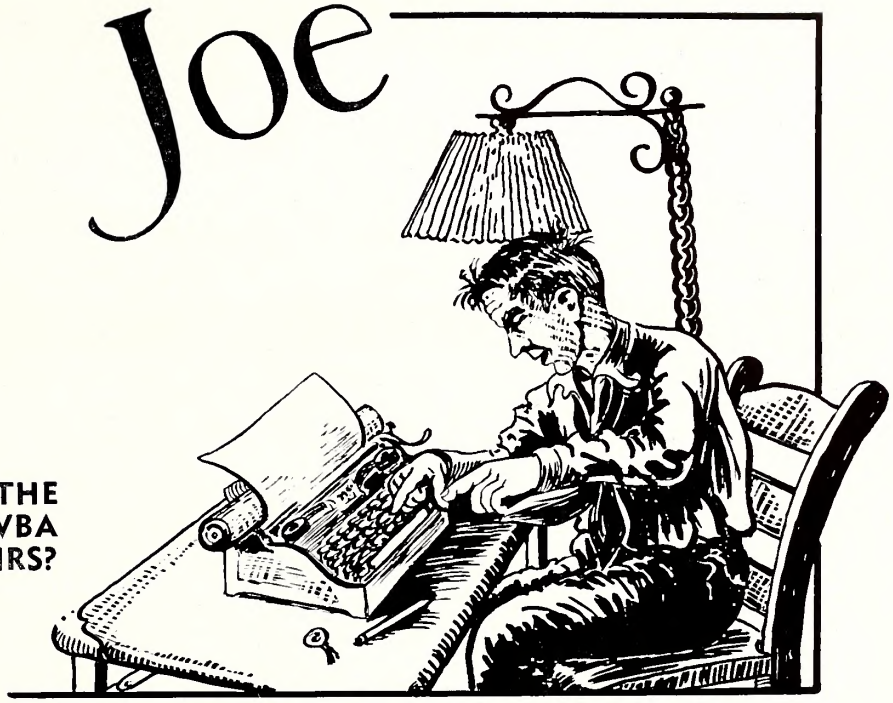
AS A CONTINUATION OF ITS BIG GAME REDISTRIBUTION AND RESTORATION PROGRAM THE WILDLIFE RESOURCES COMMISSION HAS COMPLETED NEGOTIATIONS FOR THE PURCHASE OF SEVERAL THOUSAND OF ACRES OF LAND ADJACENT TO DOUGHTON PARK IN THE NORTHWESTERN PART OF THE STATE. THE AREA HAS BEEN STOCKED TO WHITE TAIL DEER AND WILL BE KEPT UNDER STRICT PROTECTION UNTIL DEER HAVE BECOME ESTABLISHED. IT IS BELIEVED THAT THE ESTABLISHMENT OF THIS AND OTHER BIG GAME RESTORATION AREAS WILL RESULT IN GOOD BIG GAME HUNTING FIVE OR SIX YEARS FROM NOW IN AREAS WHERE THERE HAS BEEN LITTLE OR NO DEER HUNTING IN THE PAST.

AT ITS JANUARY MEETING THE WILDLIFE RESOURCES COMMISSION APPROVED AN INITIAL TROUT STOCKING LIST FOR STREAMS IN THE WESTERN PART OF THE STATE WHICH WILL BE OPENED TO TROUT FISHING ON APRIL 15. THE COMMISSION HAS ESTABLISHED A POLICY OF MAKING AN INITIAL STOCKING OF TROUT PRIOR TO THE OPENING OF THE SEASON, AND FOLLOWING THIS INITIAL STOCKING WITH SUBSEQUENT PLACEMENT OF FISH AS THE SEASON PROGRESSES AND THE NEED FOR MORE STOCK ARISES. 103,600 BROOK, BROWN, AND RAINBOW TROUT OF LEGAL SIZE ARE INCLUDED IN THE INITIAL LIST, AND THESE WILL BE FOLLOWED BY THOUSANDS MORE AS THE SEASON PROGRESSES. AT PRESS TIME EXACT FIGURES ON THE NUMBER OF TROUT TO BE STOCKED SUBSEQUENTLY TO THE INITIAL STOCKING WERE NOT AVAILABLE.

THE STATE'S LARGEMOUTH BASS HATCHERY NEAR FAYETTEVILLE IS NOW UNDER THE SUPERVISION OF EUGENE SMATHERS, WHO WAS FORMERLY HATCHERY ASSISTANT AT ARROW WOOD GLADE BEARING STATION NEAR FRANKLIN.

SPECIAL REGULATIONS AND SEASONS FOR TROUT FISHING IN WESTERN WILDLIFE MANAGEMENT AREAS WILL BE SET DURING THE MONTH OF MARCH AND SHOULD BE READY FOR DISTRIBUTION BY APRIL 1. PERSONS WISHING TO OBTAIN COPIES OF THESE REGULATIONS MAY OBTAIN THEM BY WRITING TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH.

Dear Joe



Wildlife Resources Commission
Raleigh, N. C.
Gentlemen:

WHAT'S THE MATTER WITH THE BASS FISHING IN THE CATAWBA AND YADKIN RIVER RESERVOIRS?

Yours truly,

Joe Doaks

Dear Joe,

That's a good question, and we have been trying to get the answer. North Carolina has just been visited by a nationally recognized expert in the fisheries field; and since it was a chance remark of yours which really brought him here, I want to tell you about it.

Remember last Thanksgiving Day? We had shot birds in the morning and Mary had stuffed us full of turkey and mince pie afterwards. You and I were sitting by the stove and you were telling me how the boys in your sportsmen's club are just cussin' up a storm because the Wildlife Resources Commission has not built a bass hatchery to stock the power reservoirs of our Piedmont region, and how the fishing has gone completely to pot in Tillery and Catawba Lakes. It was about this stage of the conversation where you cracked, "The fishing is so sick that we may as well call in the doctors and have a consultation and then let it die and bury it." You may not remember that facetious remark, Joe, but your idea of the consultation stuck! Why not have a consultation on the subject? Why not invite an inspection by a specialist and see if he might suggest something better than our present practices?

It was with this thought in mind that the Wildlife Resources Commission wrote to the Sport Fishing Institute in Washington, D. C. and asked for help. The Sport Fishing Institute is a non-profit corporation which is dedicated to the improvements of all kinds of sport fishing everywhere in the country. It employs outstanding men in the fisheries field to give advice to those who want it on the subject of improving their sport fishing. The Executive Vice-President of this organization is Dr. R. W. Eschmeyer, who specialized in lake management in his formal fisheries training, and who earned national recognition as a leading biologist in that field during the years he conducted the research and management of the TVA lakes fisheries. It was particularly kind of Dr. Eschmeyer to take time from his many other duties to personally inspect the lakes of the Catawba and Yadkin Rivers, in response to the Commission's invitation, and to give us the benefit of his advice and suggestions.

Of course you know Clyde Patton, the Executive Director of the Commission, and last summer you met Duane Raver, our lake biologist. After Dr. Eschmeyer finished his inspection of the lakes, the four of us spent a long evening in talking over what the problems were and what could be done to improve the fishing in the power reservoirs of the Piedmont area.

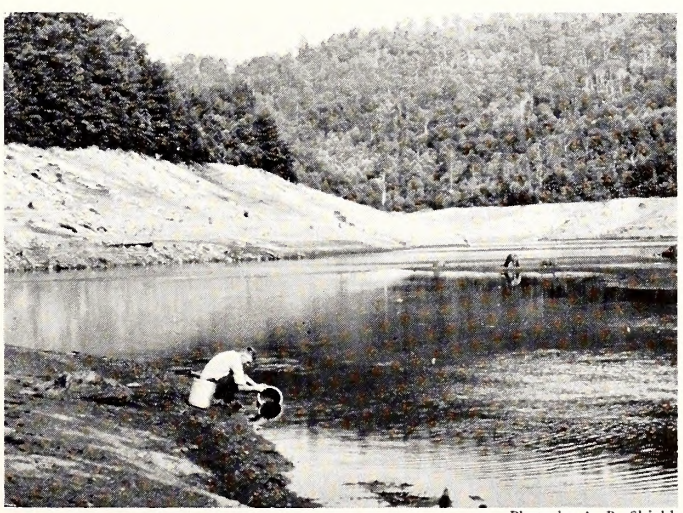


Photo by A. R. Shields

Bass and bream spawn in shallow water; and when drawdowns occur during the breeding season, the eggs are exposed to the air and killed.

The factors which he believes to be most important in preventing larger populations of bass, and consequent larger catches, are siltation and drawdowns. Of course, the dams were built to produce electric power and it takes water to turn the turbines. The water must be drawn off if electricity is to be produced. Unfortunately the bass and bream build their nests in shallow water, and when a drawdown occurs after the eggs have been laid they are exposed to the air and killed. This is only true of drawdowns during the spawning season, of course. As soon as the young are able to swin well and begin to travel in schools, they can move along with the water as it recedes. In fact, drawdowns may be a help at times. Particularly in winter when the fish are not moving about much, it is beneficial to get the forage fish out of the marginal vegetation and concentrate them so the bass can find them more easily. The only ones that hurt are the drawdowns which expose the fish nests during the three or four weeks at the height of the spawning season. But, Boy, how they hurt! One such drop in the water level can kill millions and millions of bass in the egg and fry stage. It can put a mighty big dent in the year's crop of bass in the lake.

The second major problem is siltation. Muddy water is bad for the bass and bream for two main reasons. Although the male fish fans the eggs almost continuously, a thin layer of silt will smother them and keep them from developing. After a heavy storm, when the water is red and is dropping its load of silt all along the bottom, it is impossible for the fish to keep the eggs clean. This can kill millions of fish at once, too! Then, again, our bass and bream feed principally by sight. They go get their food after they see it, and they just cannot see it in water that is always muddy. This is not true of many of the rough fish, which feed principally by sense of smell, so they are able to thrive where the game fish starve.

Photo by Jack Dermid

Eroding land is harmful to fish populations, for silt will smother the eggs and keep them from developing.

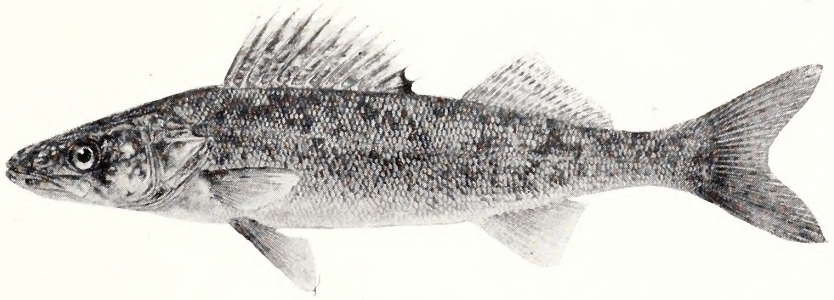
These two major problems of drawdowns and siltation are beyond the realm of the Wildlife Resources Commission to control. The only hope for improvement in the drawdown situation is a voluntary effort on the part of the power companies to maintain water levels as best they can during the spawning season. There is a limit to how far they may be expected to go, however, for obvious financial reasons.

It is good to be able to report that the siltation situation is improving. Dr. Eschmeyer inspected this area some twelve years ago. He reports that there is now a tremendous increase in terracing and contour plowing on the farms of the watershed. The Soil Conservation Service is doing an excellent job in showing the farmers how to keep the soil on the land and out of the water, and the farmers are learning that the conservation of the top soil on their fields is a paying proposition. The reduction of mud in the Catawba and Yadkin rivers depends directly on the farming practices on the watershed. We hope and expect that it will continue to improve.

This seemed like a good time to get an opinion from a recognized expert on the question the boys in your Wildlife Club keep raising, so I asked Dr. Eschmeyer directly, "Since interference with natural spawning appears to be a serious consideration, would it be advisable to build a bass hatchery and devote the entire output to these lakes?" Doc looked at me as if I had asked if he thought we would get a cut in income taxes next year. "Don't do it," he said. "That's not the solution." He did things with figures for a few minutes and then came up with the answer that it would take a mighty fine hatchery to affect the bass population in even one big reservoir. One big rearing pond covering over 40 acres actually increase the bass supply of a reservoir by *one* bass for each *seventeen* acres of water.

He went on to tell of another experience. The output of a hatchery was placed in a pond along a reservoir. Some months later the pond was drained and the fish were carefully counted. They now number less than a thousand. Over half of these would still serve as food for other fish, and only ten percent of the bass were being caught according to tagging studies. At most, the hatchery increased the bass catch in this big reservoir by 50 fish. Hatchery costs were about $5000. That's right, Joe! All of one hundred dollars *each!*

It's just like we have been telling the boys all along. A female bass will lay about 10,000 eggs. When conditions are right most of these hatch. But of all these fish, only a dozen or more can be expected to live long enough to be catching size. Most of the fish end up as a meal for some bigger fish. A truck load of hatchery bass doesn't add up to many catchable-sized fish. In a little pond that truck-load can do some good if there's plenty of



The establishment of walleyed pike in the large reservoirs of the Piedmont may prove to be the answer to better fishing.

food. In a big reservoir even dozens of truck-loads don't mean much. While the bass fishing is not red hot by any means, there still are a lot of bass in these lakes, and in all that water the output of a hatchery would not make one tenth of one percent difference in the population. And incidentally, Joe, these ideas go double for your local bass rearing pools, too.

Since it appears that the improvement of bass fishing in these waters is pretty much in the hands of the power companies and the farmers, we asked Dr. Eschmeyer if he could recommend any specific thing the Wildlife Resources Commission might do to shorten the time between bites for the fisherman. And what do you think he suggested, Joe? Introduce walleyed pike! Of course they really are not pike at all, but are large members of the perch family. He pointed out that they are excellent game fish, providing plenty of excitement on the hook and also one of the best fish dinners you ever ate. The drawdowns will not bother them because they do not build nests in the shallows like the bass. They do prefer clear, cold water, though, and it is possible that some of these lakes may be too warm or too muddy for them. He recommended that we give the walleye a fair trial in all of these power reservoirs, and if there some lakes that prove to be unsuitable, then we can try other and less desirable species to supplement the black bass populations.

Of course, Joe, you and the rest of the boys know that we already have the program under way to introduce walleyes in these waters. We hatched out some eggs last spring and stocked the fry in Chatuge, James, and High Rock. Some of them must be doing all right, too. One specimen was collected in Lake James in November which was ten and three-eigths inches long. That's growing! By next winter they will be large enough to transplant. We expect to take enough out of these lakes where they are doing well to give the other lakes a start. In the spring of 1952 they all should be big enough to spawn, and we expect to have spawners in every lake of the Catawba and Yadkin by that time. After that we can only hope for the best. Keep your fingers crossed, Joe.

Best wishes

Harry Cornell

P.S. Please remind the boys that the length limit on walleyes is fifteen inches. We must let them spawn once at least.

JHC

• CONTINUED FROM PAGE 7 •

a time when mental relaxation is all-important to our health and well-being. I'm not familiar with the attitude of the power interests operating the dams on the Catawba and the Yadkin, but my guess is that they can be counted on to cooperate as fully as their program permits in matters pertaining to fishing on the reservoirs.

One question is often raised—what about stocking as a substitute for natural reproduction? We can answer this best by calling attention to a study made on a lake a number of years ago. All bass and sunfish nests were counted, and the young were syphoned from a representative number of nests. The production of small fish added up to almost exactly a half million per acre. Of these half million only a few dozen grew to be adults. There wasn't food for more. The chances of a newly-hatched bass or sunfish living to be an adult are less than one in a thousand. Of course, a two-or three-inch hatchery-raised fish has a much better chance of surviving, but even a fish of this size can still serve as dinner for some bigger fish. To substitute hatchery fish for natural reproduction in these big waters, we would need to stock immense numbers of fish. The output of a normal-sized hatchery would be little more than "a drop in the bucket." Stocking isn't the answer to better fishing on big reservoirs.

Sizing up the general situation—the improved farming means less silt and better fish conditions, the program of introducing new species is an interesting experiment, and a thorough study of several of the waters may furnish some useful information. If, in addition, the spawning conditions can be improved, there may be better fishing ahead on the big waters of the Piedmont.

WILDLIFE CONSERVATION STRESSED IN JOHNSTON COUNTY

By Lunette Barber

Wildlife Education Representative

Photo by Jack Dermid

Mr. C. W. Tarlton, assistant county agent, and Eva Wood Johnson, first prize winner of the 1950 county wildlife contest, plan future bicolor lespedeza plantings.

JOHNSTON county has one of the most outstanding 4-H Club programs in the state. The county is large, thickly populated, a good agricultural section, and for a long time the schools have been consolidated and well supervised. In each school the principal and teachers, at the request of the county superintendent, support the full program. The county is most fortunate to have at the present, as well as in the past, excellent leadership in the 4-H Club work.

The members are not only learning worth-while things but they are actually doing them in order to make better citizens of themselves. One project carried in 4-H Club work is "Wildlife Conservation," and the members are realizing that putting into practice wildlife conservation is a great achievement and that they are rewarded in many ways.

When Mr. C. W. Tarlton, assistant county agent, was asked about the work in the county, the following report was given:

"One hundred twenty-five 4-H Club boys and girls conducted wildlife projects in Johnston county in 1950, and at least 200 members have expressed a desire to work on a conservation project in wildlife in 1951. This has proved to be a popular project in all schools and much emphasis has been stressed on wildlife.

"The 4-H purpose of this conservation project is to bring about a better understanding of the value of wildlife and to create a consciousness on the part of the farm boy and girl to the value of such a program in relation to farming, its economic value and its recreational advantages. In order to complete the project, the club member is required to make a farm survey and survey the wildlife seen on the farm, the wildlife habitat, and ways of improving conditions for wildlife.

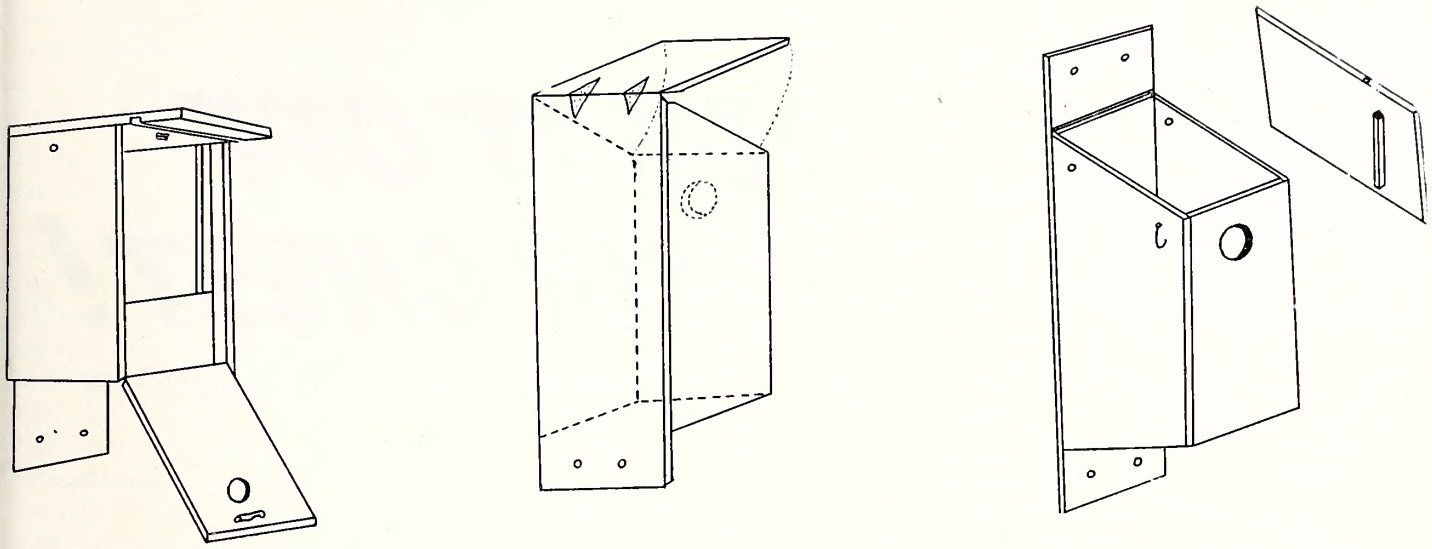
"The Johnston County Wildlife Club has added emphasis to the program by offering cash prizes to club members who win in wildlife projects. In cooperation with this organization the Extension Service has added one additional requirement for completion. In addition to the record book, the story of the project, a leaf and insect collection, a border strip of bicolor lespedeza must be planted in order for the member to be elegible for the prizes.

"For the three county winners, a free trip to the State Wildlife Camp is given by the State 4-H Department, and the Johnston County Wildlife Club offers $25 first prize; $15 second prize; and $10 third prize. For many summers Johnston county has been well represented at the camp.

"First prize for 1950 was awarded to Eva Wood Johnson of Four Oaks school; second prize went to Rose Marie Barefoot of Four Oaks school; and the third prize to Jack Pilkington of Smithfield school.

"Emphasis has been placed on providing border strips and a large number of 4-H members have seeded feeding areas in soybeans, milo, and in 1950 six club members put out bicolor lespedeza seedlings for wildlife purposes. Leroy Holley, Route 1, Four Oaks, reports that his border strip in bicolor lespedeza has provided an ample supply of feed. He plans to establish other strips in the coming year. Ten 4-H boys and girls have already expressed a desire to secure bicolor lespedeza plants which are provided free from the Wildlife Resources Commission's nursery for 1951, and many others will seed common food plants for wildlife purposes. Old tobacco plant-bed sites have been utilized for the purpose of providing food for wildlife."

So with the cooperation of the schools, county agent, his assistant, home agent, 4-H leaders, the Johnston County Wildlife Club, which has already offered prizes for 1951, and the interest of 200 boys and girls, great achievements are expected in the future.



Details of bird house construction. Four points to consider: (1) A natural finish is more suitable than a highly painted house. (2) Build house so that it can be easily cleaned after use. (3) If necessary, protect the house with a cat guard. (4) Locate houses to face the south.

WANTED — HOUSES FOR RENT

By Bill Hamnett

Wildlife Education Representative

Now is the season of the year when many birds are returning from their wintering areas. These, and those who spent the winter with us, are looking about for places to nest. Most birds nest in natural surroundings but some will "rent" houses or homes that have been erected for their use. The rent they will pay will be worth more than dollars and cents. Think of the number of pestiferous insects, larvae, and worms taken from your neighborhood to feed the hungry young. What about the pleasure of peacefully sitting in the yard at home and having your fancy thoughts accompanied by the cheery song of robins, wrens, or bluebirds. What a gratifying experience it is to know you have built a good house; put it in a good location; and have had a family of birds grow up right near you.

Building a bird house is not a hit and miss proposition. Houses should be properly designed for the kind of bird you are most interested in having. There is a greater chance of getting your family when you provide for the requirements. The following chart gives dimensions for houses used by most birds that will adopt this type of structures. The diagram illustrates points in construction you should adopt in any house you may build. If you undertake this project how about letting us know later on what success you had in "renting" your house.

SPECIFICATIONS FOR BIRD HOUSES

SPECIES	Floor Cavity	Depth of Cavity	Hole above Floor	Diameter of Hole	House above Ground
Chickadee	4 x 4″	8-10″	6-8″	1⅛″	5-15 ft.
Tufted Titmouse	4 x 4″	8-10″	6-8″	1¼″	5-15 ft.
White-breasted Nuthatch	4 x 4″	8-10″	6-8″	1¼″	12-20 ft.
Bluebird	5 x 5″	8-10″	6″	1½″	4-10 ft.
Crested Flycatcher	6 x 6″	8-10″	6″	2″	8-20 ft.
Flicker	7 x 7″	16-18″	14-16″	3″	8-20 ft.

• CONTINUED FROM PAGE 6 •

produced. Despite conscientious and painstaking work, the total numbers recorded are only estimates from which the seasons and bag limits are set.

As the birds move into their wintering grounds they are counted again, while observers along the flyways make spot counts to further check waterfowl population trends. At the close of the shooting season another count is made, this time in the wintering grounds. In the spring and summer the nesting grounds count is resumed, and so on through a never-ending cycle.

Besides rigid control of bag limits, length of season, and shooting hours, it has been necessary to outlaw certain means of waterfowl shooting, such as the use of live decoys, power craft, vehicles of any type other than rowboats and the like, and even the size of shotguns. Baiting birds to a blind by strewing food for them in the vicinity has been prohibited.

Most authorities believe that with controlled hunting and a concerted effort toward restoration of nesting and wintering grounds, the mallard, his fellow puddle ducks, and all waterfowl are well on the road to survival.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

"Gentlemen:

"Anonymous letters should be ignored in most cases, but in this instance, due to political repercussions against three members of the seven writing this note, such a note is being mailed to the Commission.

"This group hunts together in Wake and Chatham Counties, also does some deer hunting in the Eastern part of the State. The attached picture of a bear shot in Tyrrell County does bring the matter of violation of the law to the forefront. This group believes in obeying the North Carolina game laws, but in the case of this bear, we wonder if such obedience to the laws is worthwhile. Here is a man who places his picture in the . . . . . after violating three game laws of North Carolina. Can this go on and have such men as are sending this note to the Commission respect the laws they wish to obey?

"The man who killed this bear shot this bear between the hours of sunset and sunrise, a violation of the law. Also he shot the bear from a floating device, a wood boat or skiff, a violation of the law; also he used a flashlight to shine the bear's eyes at night in order to shoot, another violation of the law. What are the Commission's views on this matter and is any action going to be taken against this man? Two members of this group were deer hunting when this bear was shot and have verified all the violations listed above and the people who live in the territory where the bear was shot can say the same thing.

"We can have no respect for our laws when this goes on, and then is advertised as it is by the picture from the . . . . . Either we live up to the law or disrespect them entirely as has been done by the man in the picture.

"We say that two men were deer hunting when the bear was shot. They were in the territory hunting when the bear was placed in a ice plant, after found by dogs the day after the night shooting."

(Signed) Seven men who have paid licenses to hunt and also respect the laws.

You will note that the name of the paper which published the story and picture of the bear in question has been deleted. This is not to protect the hunter but out of respect for the paper which accepted the news in good faith. We can hope that if the facts alleged by the anonymous authors of the letter were known by the staff of the paper, there is good reason to believe they would have been published by the paper without fear of political repercussion.

The letter asks two questions: What does the Commission think about such a violation and what is it going to do about it? First, the staff of the Commission *can* think only one thing. The laws of the State prescribe the stand we must take in a case of violation of these laws. The violator must be brought to trial where the court determines his guilt or innocence. To make a case hold up in court, we must have factual evidence and the assistance of reliable witnesses. *Hearsay evidence is not acceptable.*

As the principal evidence in the violation alleged above remains hidden by anonymity, no case could possibly be made to stick in any court. Therefore, we can do nothing about it. Of course, we could go to the county where the bear was killed and, after investigation, bring charges and then subpoena all persons who have any knowledge of the facts. Such a procedure is a sad commentary on the sense of responsibility in evidence toward our game.

One can only wonder what life would be if our policemen on the beats of America and our fighting men in Korea felt that anonymous protest was the only solution. There can be no compromise or appeasement with the gangster, chiseler, or any other illegal operator, whether it be an individual or a nation. The answer lies entirely within the individual whose ideals are worth the fight and the sacrifice.—W.D.

From Dr. J. M. Worthington, Charlotte, N. C., the following: "I have always thought that no "posting" of land was necessary to make it illegal for one to hunt or fish on one's land

without permission of the owner—that the law against ordinary trespass would apply. Please discuss this matter."

To a great extent, custom has laid the groundwork for many of our present ways of thinking. Compare the bathing suit of the early twenties with the present day models. For generations we have hunted and fished where and as we pleased, and many courts would not try a case of trespass while hunting or fishing unless there was a long history of injury done to the landowner. Times have changed and the days of the free ride are coming to a close. If we expect the farmer to provide game at his own expense and effort, we must then expect his respect for said game to increase. Too, a man's constitutional right to control his own property transcends the laws of the State whether or not game or fish are involved.

After the close of the hunting season last year, we published a letter from Mr. J. M. Cole of Durham, N. C., giving a report on his conservation activities and the results achieved. Again Mr. Cole reports as follows:

"I would like to give you some information concerning the results from sowing some food patches last spring. My brother, N. D. Cole, and I sowed eleven food patches last spring. We prepared the patches with tractor and bog harrow. The patches were sowed in kobe lespedeza, with a few serecia and bicolor seed. The patches were all about ¼ acre. One patch had peas and some lespedeza. We have been checking these patches and have found that there are seven coveys of birds in close vicinity of these patches. I found three coveys this afternoon in one hour, and all were in or had been feeding in patches.

"We sowed lespedeza seed in six other places, such as around old sawmills, and where people did not cultivate out to the woods in their fields. To date we have found fourteen coveys of birds where we sowed or had sowed previously. This definitely proves to me that if we will sow more food patches we will have the birds.

"We sowed 120 pounds of kobe lespedeza, 30 pounds of serecia, and put out 4,000 bicolor plants, at a cost of less than $75.00 last spring.

From Mr. Ralph Loving of Kannapolis, N. C., the following:

"I believe in one of your WILDLIFE IN NORTH CAROLINA magazines a few months past it was printed that the chukar partridge would not raise and stay in the State of North Carolina.

"My friend, Clyde Endy, and myself planted two pair of chukars on his farm this spring and the birds raised two coveys of which were seen one covey with about 12 or 15 chukars still staying or otherwise the birds were flushed up on his farm November 30, 1950.

"I hope that this information will be a help to WILDLIFE and others who will help and try to plant more chukars to get started on as many farms as possible. They are wonderful birds."

We appreciate the fine interest shown by the author of this letter, because such active interest on the part of many sportsmen all over the State is going to do much to improve our game and the sport of hunting. We can only say that we hope Mr. Loving will keep us informed as to the progress of his birds over several seasons, as this information is useful and valuable to us. There is much yet to be learned in the field of wildlife management and a large share of tomorrow's progress will be due to the active cooperation of the sportsmen.

The following is a report required by the Commission of all persons who raise minnows under permit for sale as bait. Its interest lies in the fact that this man has found that a profit of about $750.00 can be made from one half-acre of land. When this is put on an acre basis, the $1,500 compares very well with the return from an acre of tobacco, and look at the difference in overhead and effort!

"At this time I am reporting the results of my minnow raising. Pond No. 1, consisting of ¾ acre, resulted in complete failure. Pond No. 2, consisting of ½ acre, did fine. I raised and sold about 18,000 at fifty cents per dozen—$750.00 net. Still have about 15,000 to start the next season. These minnows are what we call the creek shiner. Pond No. 2 was stocked with 125 of these creek shiners April 15, 1950.

"The reason that Pond No. 1 was a failure, I used water from the hard surface road. This caused my stock to take the sorehead and die. This pond has been drained and cleaned, a well dug, and am now pumping pure water. This year I am going after the shiners soon to stock this pond with this time. Many thanks for the permit to get these shiners.

"In pond No. 2 the water came off a cultivated field joining the pond. I used well water from my house when needed to keep my water level up to a certain level.

"I wish at this time to renew my permit for raising minnows. Enclosed you will find a check for fifty cents to cover this cost of license.

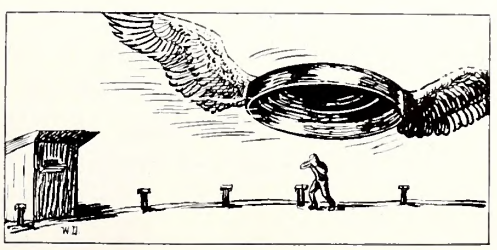
"Also I wish to renew my permit to seine minnows out of the creek, although I do not think I will have to use it. I just want it in case I might run short a time or two."

WOMAN WANTS SKEET ON SONG BIRD LIST

A southern Ohio lady wrote the Ohio Conservation Department that, "I see by the papers that they are shooting skeet all over the state. They'll soon be extinct unless you put them on the songbird list along with the quail."

Officials explained that in skeet, clay targets are fired upon with shotguns.

—Michigan Out-Of-Doors



CHAMPIONSHIP FIELD TRIALS ASSOCIATION meeting held in Raleigh on January 10 to plan statewide field trials to be held this spring at the Sandhills Wildlife Management Area. Officials present were: Seated, left to right, D. S. Inscoe, 2nd vice-chairman, steering committee; Arnold Phillips, 1st vice-chairman, steering committee; Roland McClamroch, president, North Carolina Wildlife Federation; D. K. Sing, chairman, Wildlife Resources Commission; Clyde P. Patton, executive director, Wildlife Resources Commission. Standing, left to right, L. T. Wilkinson, chairman, fox trials committee; Thurmond Barbour, chairman, coon trials committee; F. F. Carter, chairman, beagle trials committee; and R. R. Rhyne, chairman, bird dog trials committee.

SWANS SHOT WITH .22 RIFLE

Photo by Jack Winslow

Eldon Winslow, Wildlife Protector of Perquimans County, holds one of two whistling swans that were shot through the wing tendons by violators last December. Both birds recovered and were released in Currituck Sound.

Wildlife Essay Contest

Judging Begins March 1. State Winners Will Be Determined by April 10. Watch Future Issues of Wildlife for Announcement of Winners.

NEW COMMISSION OFFICERS

New officers of the Wildlife Resources Commission photographed at a recent meeting in Raleigh. Left to right: J. W. Moore of Hayesville, vice-chairman; D. K. Sing of Charlotte, chairman; and G. E. Beal of Red Oak, secretary.

• CONTINUED FROM PAGE 11 •

Because of the viewing system, the twin lens reflex is well suited for closeup work. The camera focuses to about three feet without noticeable parallax, and the short focal length lens has a large depth of field. If you wish to move closer, for instance, to shoot the head of a largemouth bass or a flower blossom, similar supplementary lenses may be slipped over both the viewing and the taking lens. When using these closeup attachments, however, there will be a difference between the ground glass image and one recorded. After the camera is focused, it is necessary to raise it slightly so that the taking lens will be placed in the position that was occupied by the viewing lens. A little experience will enable you to obtain good framing without difficulty. Since the closer the subject is approached with the camera the smaller the depth of field, it is advisable to use the smallest f/ stop possible.

A photoelectric exposure meter is a desirable, but not an essential accessory. It is a tremendous aid for working under unusual lighting conditions. By exercising care, though, consistently good exposures can be made by following the directions supplied by the manufacturer with each roll of film.

SUMMARY

The combination of a good viewing and focusing system, fast lens and shutter, and suitable film size makes the twin lens reflex the nearest approach to the theoretical all-purpose camera for general amateur use. It is a favorite camera for professional photographers when portability and speed in shooting are required. Most of the pictures appearing in *Wildlife in North Carolina* are taken with a twin lens reflex. Its greatest asset is that "you get what you see." It is the best single camera for the sportsman.

GOVERNOR SCOTT

announces . . . *Wildlife Restoration Week*

STATEMENT BY GOVERNOR SCOTT ON RESTORATION WEEK FOR WILDLIFE IN NORTH CAROLINA, MARCH 18-24, 1951

Once again Democracy is faced with a powerful force. Our nation and our State can be only as strong as their ability to draw upon our renewable natural resources—soils, waters, forests, and wildlife. These resources are interdependent, and one cannot be depleted without affecting the others.

Many North Carolinians enjoy wildlife through its recreational value in hunting and fishing or through its esthetic value in the enjoyment of nature.

Because people enjoy these values, many millions of dollars are added to the total wealth of the State each year.

All of us must become aware of the need for conserving our wildlife and our other natural resources. This awareness can be brought about only by teaching the fundamentals upon which the future of these resources depends. Until every American is aware of his dependence upon natural resources, there will be an urgent need for education to this end.

I therefore urge that during National Wildlife Restoration Week, March 18 through 24, the people of North Carolina place special emphasis on the restoration and conservation of our wildlife resources.

W. Kerr Scott

February 8, 1951

March 18 - 24, 1951

●

The wildlife of North Carolina and our Nation is a priceless natural heritage—a resource we must guard zealously and use wisely. Let us all — every man, woman, and child — take this opportunity to make Wildlife Restoration Week a —

REAL SUCCESS

●

PLAN NOW

ARE YOU HELPING WILDLIFE BY TEACHING THE YOUTH OF YOUR COMMUNITY THE NEED FOR WILDLIFE RESTORATION?

The Wildlife Resources Commission has distributed thousands of bicolor lespedeza seedlings and other plants for wildlife food and cover. Help restore wildlife by improving habitat. Food and cover are the essential elements of wildlife restoration.

PLANT IN THE SPRING WHERE YOU HUNT IN THE FALL

WHEN MORE LANDOWNERS FEEL THIS WAY:— WE WILL HAVE MORE GAME - MORE PLACES TO HUNT AND LESS "POSTED" SIGNS

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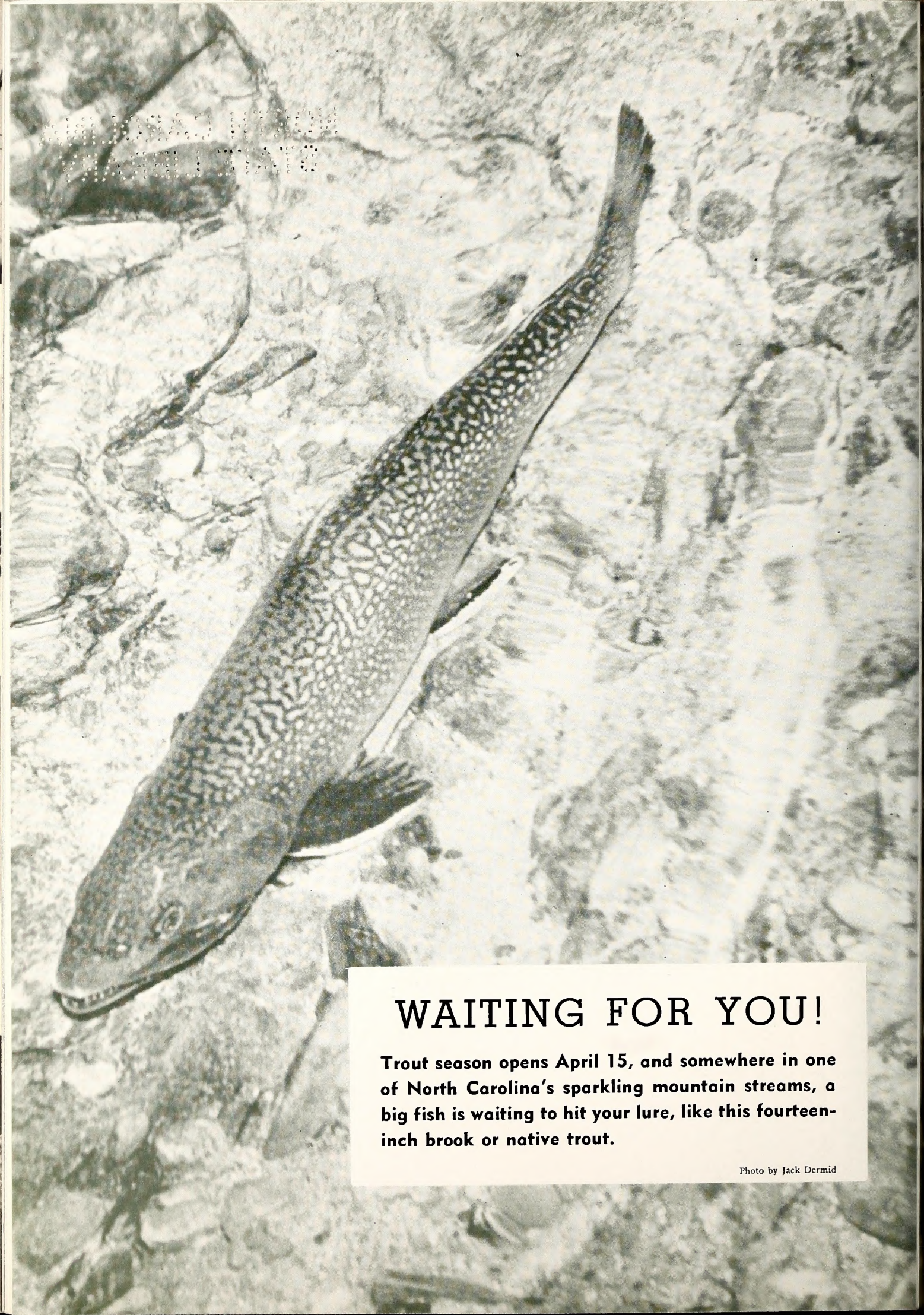


WAITING FOR YOU!

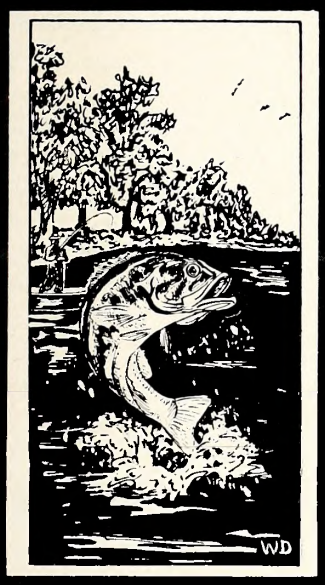
Trout season opens April 15, and somewhere in one of North Carolina's sparkling mountain streams, a big fish is waiting to hit your lure, like this fourteen-inch brook or native trout.

Photo by Jack Dermid

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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W. KERR SCOTT
Governor

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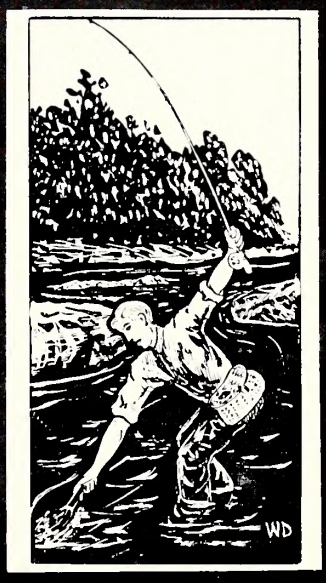

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April, 1951 Vol. XV, No. 4

ROD AMUNDSON, Editor
WIN DONAT, Art Editor
JACK DERMID, Managing Editor
MARTY MABRY, Circulation

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COVER

Win Donat captured the fleeting action of a brook trout with delicate water colors. The brook is the only trout native to North Carolina.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 23, 1912.

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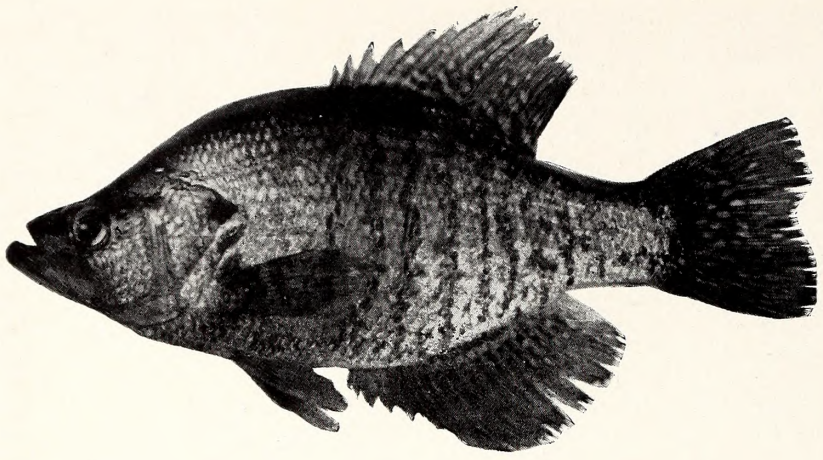


The two species of crappies cannot always be separated by color. With the white crappie (shown), the distance between the eye and the front of the dorsal fin is much greater than the length of the dorsal fin.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-seventh of a Series on The Wildlife Species of North Carolina

THE CRAPPIES

By ROD AMUNDSON

HISTORY

BLACK crappies and white crappies (often called speckled perch), although of entirely separate species, sometimes resemble each other so much that even the fish expert must get down to making measurements, scale counts, and other morphological examinations to decide which crappie is which.

Crappies are not a native Tar Heel species. When America was first settled, crappies were restricted to the upper Mississippi Valley and the Great Lakes Basin. Early settlers soon found that crappies were good eating, were fairly easy to catch, and provided fine sport in addition to food for the table.

When attention was first given to American fish culture, it was learned that crappies were easy to raise and extremely prolific. They were found to be readily adaptable to a variety of habitats. These discoveries indicated that crappies could be introduced to waters other than those in their native range. As a result, they have been introduced widely throughout the United States, sometimes to the benefit and at other times to the detriment of fishing.

In North Carolina both species were introduced to the large reservoirs and the lakes and ponds of the Piedmont. More recently they have found their way into the coastal plains lakes. Everywhere they have wandered they have produced an abundance of fishing. On occasions, because of their high breeding potential, they have become over-abundant and stunted from lack of food. Today the angler lucky enough to come upon a school of crappies is due for excellent sport on a light rod, and some delicious food on the table. Crappies are one of the better-tasting panfish.

CHARACTERISTICS

Before giving a more detailed description of these two fish, let us first set up a rule for telling them apart. We shall assume that you recognize the fish as being a crappie. Break off a slender twig, a long blade of grass, or a pine needle. If you carry a small ruler in your tackle box that will do. Measure the length of the dorsal fin (that's the one on the back) where it joins the body. Mark this distance with your thumbnail and compare it to the distance between the eye and the front end of the dorsal fin. If the length of the dorsal fin is almost equal to the distance from the front of the dorsal fin to the eye, you have a black crappie. If it is much less than the distance from the front of the dorsal to the eye, you have a white crappie. Try this trick on the accompanying illustrations, and you will see how easily it works.

In general, crappies are typical panfish. They are compressed, from side to side, and the back is arched highly from a point between the eyes. Like other

panfish, the dorsal and ventral fins begin with a series of spiney rays and end with soft rays. Crappies are more predacious than bream, for example, and have much larger mouths in proportion. The black crappie usually has a more highly arched back than the white crappie, and where the white crappie tends to be silvery with dark blotches forming vertical bars, the black crappie is darker and more blotched with dark markings.

From these general color patterns crappies may widely vary. Once you have learned to recognize the breed, you can tell the two apart by the dorsal fin measurement method. If, having caught (and proven) a black crappie, you can make it sound a little more exotic by calling it a calico bass. *The Fisherman's Encyclopedia,* a recent volume published by Stackpole and Heck, calls the black crappie "Calico Bass".

BREEDING HABITS

As has already been pointed out, crappies are tremendously prolific. Over 150,000 eggs have been taken from an adult female weighing a little more than a pound. Crappies prefer to spawn in deep water with a slight current, but will spawn in small ponds and lakes where there is little movement of water other than by wind action.

Female crappies have little to do with the life history of the species other than to deposite eggs in the nest. The males select the spawning bed, scoop out a nest, drive an egg-laden female to it, and induce her to expell the eggs. She disappears from the scene while the male fertilizers the eggs and stands guard over them until the young emerge.

There is little recorded information as to the time required for hatching crappie eggs. Since they spawn rather late in the spring, it could be expected that when the water is quite warm the incubation period is short. Crappies grow relatively fast, and where food is plentiful, may weigh over a pound in two years. Although pan-size crappies under a pound in weight are the rule, many reach the two-pound class, and "lunkers" over three pounds are frequently taken in Carolina waters.

FOOD HABITS

Crappies are voracious feeders, and almost entirely carnivorous. Young fish feed on a variety of insect life and small crustaceans, but change to a diet of other small fish when they reach the fingerling stage. Adult crappies feed largely on minnows and the young of other species. This latter statement is a clue to the success anglers have in catching crappies with live minnows for bait. The fact that crappies sometimes will rise to a fly or a popper bait suggests that even adult crappies are not averse to taking an occasional floating insect.

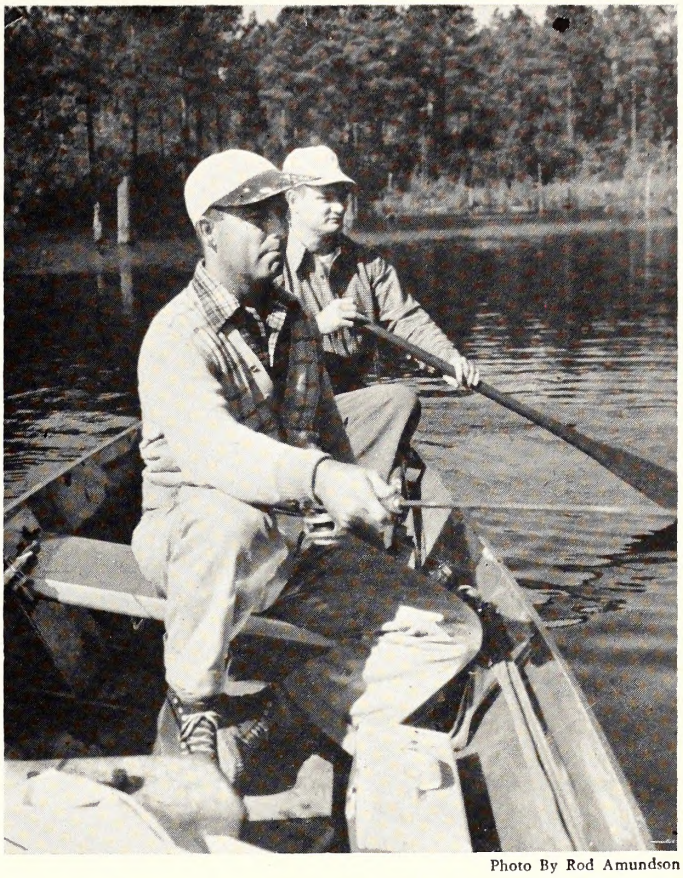


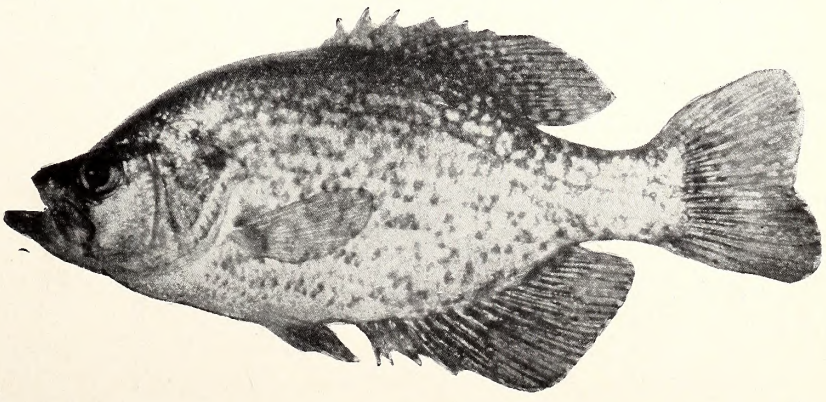
Photo By Rod Amundson

Crappie fishing with a light rod is excellent sport.

MANAGEMENT

Although rather small in size, easy to catch, and easy to feed, crappies are not highly recommended as a species to stock in a small pond. It would seem obvious that a combination of crappies and minnows stocked in a pond should be ideal. The minnows would multiply and furnish food for the crappies and the fishing would be wonderful. Unfortuntely, for this scheme, the crappies are too

• CONTINUED ON PAGE 23 •



Compare this black crappie with the white crappie on the opposite page. With the black crappie, the distance between the eye and the dorsal fin is almost equal to the length of the dorsal fin at its base.

Modern soil conservation means sound land use and protection to keep the land permanently productive. Good land management provides wildlife with essential food and cover.

SOIL *and* WILDLIFE

By Dr. H. H. Bennett
Chief, Soil Conservation Service

Read this thought-provoking address to the Fourth Annual Convention of the Southeastern Association of Game and Fish Commissioners at Richmond, Virginia, October 16, 1950. It is reprinted in its entirety because it applies to the Southeast and to North Carolina.

I AM glad to meet with you game and fish commissioners from the Southeastern states. This is a part of the country where various land and water problems challenge the attention and best efforts of all of us who are engaged in the conservation of natural resources.

You are concerned specifically with the conservation of game and fish—natural resources that make life worth living for a great many people and benefit most of us in a number of ways. I am concerned primarily with conservation of soil and water—those basic resources without which there can be no wildlife or any other kind of life anywhere. So, we clearly have a mutual interest and a common purpose in bringing about conservation of these resources in sufficient abundance for our lasting use and enjoyment.

By and large, I am happy to say, wildlife conservationists and sportsmen in general have an unusually good understanding of the farmland conservation work which is progressing so rapidly all over the country, and a real and growing appreciation of its value in enhancing beneficial wildlife. This positive support of soil and water conservation is most encouraging.

I assume all of you are acquainted with the way in which we work—that is, in cooperation with the farmer-voted and farmer-directed soil conservation districts established under state law in each state. Through these districts the Soil Conservation Service provides technical and certain other assistance to farmers at the districts' request. I believe my understanding is correct that the Fish and Game Commissions in all 12 of the Southeastern states likewise are working with many of the soil conservation districts in various ways, to the mutual

benefit of their erosion control and better land-use programs and your own fish and game conservation programs. The districts, as you know, also draw on different local, state, and federal agencies for any other help that may be available in carrying on the district programs, in addition to inviting the cooperation of private groups that similarly may be in position to help them.

Wildlife Stressed By Soil Conservation Service And Districts

Of particular interest to you is the fact that the Soil Conservation Service gives specific attention to training in biology for our farm planners and other technicians who work out in the fields, pastures, and woodlots with the district farmers. The farm planner considers the value of treating various types of land, not only for their primary agricultural use but also with an eye to any modification or special practice that will result in more wildlife through complete and adequate land treatment. He is expertly equipped to do this, because his understanding of the wildlife aspects of soil and water conservation planning and treatment is dovetailed with similar basic knowledge and adeptness in soil science, forestry, range management, agronomy, engineering, and other phases of a complete, coordinated soil and water conservation program of the kind that the Soil Conservation Service helps farmers apply to their lands. In other words, the soil conservationist is also a wildlife conservationist.

So it is that appropriate wildlife work is a part of the program and work plans of every soil conservation district and is tied in with other phases of our conservation operations. This is not left to chance; it is done consciously and with direct purpose. In this connection, let me sum up for you our Soil Conservation Service wildlife objectives in soil conservation districts:

1. To apply to land-use problems biological knowledge useful in the prevention and control of soil erosion—that is, soil and water conservation—thereby preserving natural resources.
2. To achieve productive land use on all lands, including those not adapted to tilled crops, grazing, or wood production.
3. To assist in the solution of land-use problems which involve production of useful wild plants and animals on croplands, grazing lands, and woodlands.
4. To contribute to the prevention and control of biological damage arising out of measures established for soil and water conservation and related land-use practices.

At this point, I think it would be well to explain what we mean when we talk about the kind of conservation we are engaged in—that is, modern soil conservation.

What Modern Soil Conservation Is

Modern soil conservation consists of the kind of sound land use and protection needed to keep the land permanently productive while in use. It means contouring and terracing land that needs such treatment, and strip-cropping and stubble-mulching the land as needed, along with supporting practices of crop rotations, cover crops, etc., wherever needed. It means gully control, stabilizing water outlets, building farm ponds, locating farm roads and fences as nearly on the contour as practicable, planting steep, erodible land to grass or trees, development

Every acre of land that is wasted because of soil erosion means, among other undesirable and costly results, less wildlife.

Photos By Jack Dermid

The construction of farm ponds is a conservation practice that will also yield sport and food.

of good pastures and devoting good management to them after they have been developed.

Where land is too wet, modern soil conservation calls, moreover, for drainage—with full consideration given to wildlife needs. If it is too dry, it calls for irrigation; if subject to wind erosion, it calls for wind-stripping, tree planting, growing cover crops, and stubble-mulch farming. If plant nutrients, lime, and the humus supply of the soil have been depleted, it calls for fertilization and addition of lime and organic matter. If water-soluble salts have accumulated in toxic quantities, as in parts of the West, it calls for both drainage and leaching out of the "alkali" by flooding. And modern soil conservation calls also for the use of the best of the most adaptable tools and crop varieties.

Modern soil conservation likewise calls for flood control and reservoir protection (municipal, irrigation, recreational, etc.) by treatment of whole watersheds with the right combinations of practices, land use, and structures in the smaller, upper watersheds where flood waters start. Applied at the right time and place, such watershed treatment saves soil and reduces flood and sedimentation damage, stores water in the soil for plant use and, where conditions are favorable, in the underground strata for pumping.

Research And Education Essential

And, of course, an indispensable part of modern soil conservation is a supporting program of research, such as will provide for the welfare of the land at all times, and give farmers all the advantages that progressive science can contribute. Also, a continuing, vigorous program of soil conservation education should be made a part of our teaching from kindergarten through college. And modern soil conservation calls for the maintenance of all effective work that has a chance for permanency. Such measures are not intended to be used for just a single year or cropping season. They are the basis fo land permanency, and that is necessary if we are to have a permanent agriculture—or a permanent wildlife population.

There is only one correct formula for doing the soil and water conservation job. It consists of treating the different kinds of land on a farm or ranch according to their individual needs as determined by such conditions as degree of erosion, waterlogging, etc., and using each kind according to its capacity for continued safe and economical production—whether that be for field crops, pasture, timber, or wildlife.

This is the only possible way that man can provide anything like a permanent type of soil conservation. This is a physical fact having its origin in the rigid laws of nature. There can be no substitute for it, no short-cuts, no easy way out.

Land Inventory Useful In Wildlife Development

That is why we put so much emphasis on what we call land capability surveys, which comprise a scientific inventory of the land that serves as the basis of the land's conservation planning and treatment. Through this inventory, made by our Service technicians in cooperation with the farmers, we arrive at a sound and dependable classification of all the land on a farm according to its capability for best use. Thus, Capability Classes I, II, and III land together comprise the kind of land which is suitable for continuous cultivation, with careful conservation treatment of Class II and III lands. Class IV land is a borderline grade, which can be cultivated safely only occasionally at best. Classes V, VI, and VII represent those lands which are suited only to growing grass or trees; and Class VIII land is suitable for wildlife or recreational use, or for watershed protection purposes.

This land inventory, which should be completed nation-wide at the earliest practicable date, has among its uses for other planning purposes particularly important potentialities for those who are concerned with developing wildlife resources—or the best use of land for all purposes in any way related to agriculture. For example, this capability classification shows a particular class of land which is suited better for watershed protection, recreation, and wildlife purposes than for any agricultural purpose; therefore, Class VIII land may be of great importance to wildlife and may be used solely for that purpose. This class of land may be found in extensive tracts, such as some of your coastal and inland marshes obviously not suited to growing cultivated crops or even grass or trees, but which can and should be managed for wildlife like waterfowl and fur bearers that can be produced on it. Such "wildlife land" often is found, also, in small areas on individual farms, where its development and use for wildlife production is equally important.

All together, our surveys have already shown that there is a large total area of this kind of land—probably 35 million acres or more. The fact that most of it is scattered through our good agricultural lands is a distinct advantage from the wildlife standpoint; because it encourages increased numbers of birds

and mammals valuable to agriculture. These animals destroy insect and rodent pests and help to improve distribution of game locally. All this contributes to the farmers' income and to the nation's food supply.

All Land Is Wildlife Land

I want to emphasize right here, however, that the benefits of soil and water conservation from the game and fish standpoint are in no wise limited to specialized treatments of such special kinds of land. On the contrary, all land—with the water which falls on it or flows through it—is wildlife land. Moreover, all soil and water conservation, when properly planned and carried out, is wildlife conservation. In fact, I am convinced that the unprecedented attention being devoted to soil and water conservation today is contributing as much to the welfare of game, fish, and other beneficial wildlife as anything man has ever undertaken in this country or anywhere else. And I say this without in any way discounting the unquestioned importance in this regard of our state and national forests, parks, and wildlife refuges and sanctuaries.

The New Soil And Water Conservation Era

In this present-day conservation era land, water, forest, grass, cultivated crops, and wildlife are, for the first time, being tied together and scientifically coordinated on the basis of land capability and need. This is illustrated, for example, by the very fact that I, a soil conservationist, am on your program along with such speakers in companion conservation fields as Lyle Watts of the Forest Service and Albert Day of the Fish and Wildlife Service. This coordination is a basic tenet of modern soil conservation; for without such basic groundwork, there can be no such thing as lasting conservation of our soil or other resources which depend on the soil for their perpetuation.

Nature's laws were so contrived that land, water, plants, and animals all should—and under natural conditions do, with the exception of civilized man—exist in harmony and interdependence for perpetual productiveness of these basic resources. It should be quite clear, then, that every acre of land we allow to be wasted because of soil erosion means, among other undesirable and costly results, less wildlife. That is why we soil conservationists work on the premise that all farmland is wildlife habitat —a simple fact which every farm boy or girl knows, but which their elders sometimes become too preoccupied with doing other things to remember.

When The Land Goes, Wildlife Goes With It

I have seen in too many localities how game has been driven from farms, watersheds, and larger areas by soil erosion. Fish, waterfowl, and fur bearing game have disappeared from too many places because the streams and lakes have been polluted and filled, or partly filled, with erosion sediment. In many places the sources of water have practically dried up. In parts of this country and Latin America, perennial streams have dried up as a result of rapid runoff from eroded land resulting from careless cultivation, overgrazing, burning, and wasteful lumbering. In such localities a few birds and mammals may be seen occasionally, but the wildlife has predominantly became very scarce with the disappearance of food, cover, and water. In parts of South Africa, large areas such as the Orange Free State and parts of the Transvaal formerly supported a great abundance and variety of wild game, but it has been virtually wiped out as the result of forest removal, the drying up of waterholes and streams. Whole watersheds in some of the mountainous areas have been denuded by fire, overgrazing, and improper land use. I have seen the same sort of thing in the Andes Mountains and in southeastern Brazil. The excessive cutting of forests in Cuba has had a severe effect on birdlife in Cuba.

Such situations as some of these may seem remote and of no concern to us. But we have much to account for ourselves in the decimation of the game and fish that abounded in our forests, meadows, and streams back in the days of George Washington and Thomas Jefferson. And we can't blame the severe depopulation of our wildlife in many localities entirely to guns and traps, by any means; we must credit a very substantial share of it, also, to the ax and plow which inevitably destroyed so much of the natural food and habitat for wildlife in the process of our country's settlement and development. I wonder just how far we would have to go today to find a covey of quail or to catch a mess of bass or trout if it had not been for the persistent efforts of your fish and game commissions over the country in behalf of conserving and restocking our game and fish.

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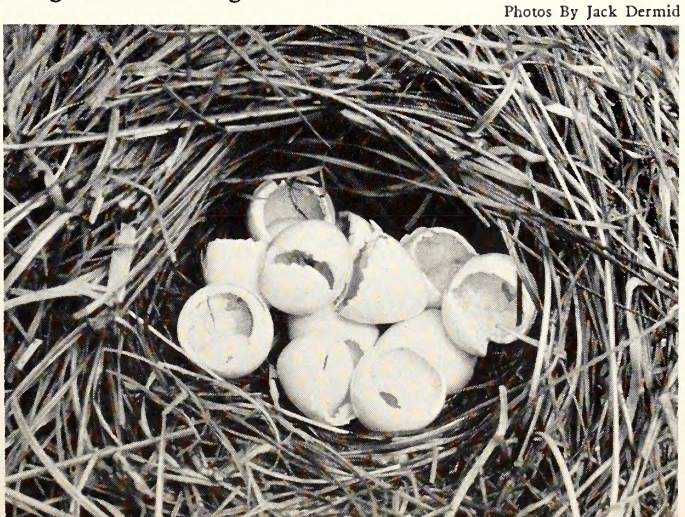
Successful quail's nest. Wildlife will increase in abundance if living conditions are good.

Photos By Jack Dermid



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

SPECIAL TROUT REGULATIONS FOR TROUT FISHING IN THE WILDLIFE MANAGEMENT AREAS IN WESTERN NORTH CAROLINA HAVE BEEN SET. AS SOON AS THESE REGULATIONS HAVE BEEN PRINTED COPIES WILL BE AVAILABLE FOR GENERAL DISTRIBUTION. COPIES OF THE RULES MAY BE OBTAINED BY WRITING TO THE WILDLIFE RESOURCES COMMISSION, BOX 2919, RALEIGH, OR UNITED STATES FOREST SERVICE, ASHEVILLE, N. C. THESE TWO AGENCIES WORK OUT AN AGREEMENT EACH YEAR FOR HANDLING SPECIALLY REGULATED TROUT FISHING. THE TROUT SEASON OPENS ON APRIL 15. THE FOREST SERVICE RESERVES THE RIGHT TO CLOSE CERTAIN AREAS TO FISHING DURING PERIODS OF EXTREME FIRE HAZARD.

INITIAL STOCKING OF TROUT IN WESTERN NORTH CAROLINA STREAMS WILL HAVE BEEN COMPLETED BEFORE THE OPENING OF THE SEASON ON APRIL 15. SUBSEQUENT STOCKING WILL BE DONE LATER IN THE SEASON TO SUPPLY THE NEED FOR MORE FISH.

HAYDEN OLDS, ASSISTANT TO THE DIRECTOR OF THE WILDLIFE COMMISSION, J. HARRY CORNELL, CHIEF OF THE COMMISSION'S FISH DIVISION, AND GAME DIVISION CHIEF EUGENE SCHWALL ATTENDED THE 16TH NORTH AMERICAN WILDLIFE CONFERENCE IN MILWAUKEE. THE CONFERENCE IS AN ANNUAL GET-TOGETHER OF WILDLIFE ADMINISTRATORS AND TECHNICIANS THROUGHOUT THE U. S., CANADA, AND MEXICO.

COLEMAN NEWMAN, DIRECTOR OF THE FLORIDA GAME AND FRESH WATER FISH COMMISSION, AND WHO IS PRESIDENT OF THE SOUTHEASTERN ASSOCIATION OF FISH AND GAME COMMISSIONERS, CALLED A BUSINESS MEETING OF THE ASSOCIATION AT ATLANTA ON MARCH 26 TO DISCUSS WITH OFFICIALS OF THE FISH AND WILDLIFE SERVICE PLANS FOR NEXT FALL'S WATERFOWL SEASONS AND BAG LIMITS. FINAL SETTING OF THESE REGULATIONS WILL NOT BE ANNOUNCED UNTIL LATE NEXT SUMMER.

GOVERNOR W. KERR SCOTT, OF NORTH CAROLINA, HAS RECEIVED A TELEGRAM FROM GEORGIA ANNOUNCING THAT GEORGIA'S GOVERNOR "HUMMAN" TALMADGE PLANS A TROUT FISHING TRIP TO WESTERN NORTH CAROLINA IN APRIL. IF THE WEATHER IS BAD AND THE FISHING POOR, THE GOVERNOR OF GEORGIA MIGHT SAY TO THE GOVERNOR OF NORTH CAROLINA, "IT IS A LONG TIME BETWEEN BITES."

ORGANIZATIONAL PLANS FOR THE N. C. CHAMPIONSHIP FIELD TRIALS ASSOCIATION CONTINUE TO MOBILIZE. THE N. C. FOX HUNTERS ASSOCIATION AND A REPRESENTATIVE OF THE BEAGLE TRIAL ASSOCIATION INSPECTED AN AREA IN CASWELL COUNTY AS A POSSIBILITY OF HOLDING BEAGLE AND FOX HOUND CHAMPIONSHIP TRIALS. THE AREA EXAMINED SEEMED SUITABLE, AND TEST TRIALS WILL BE HELD NEXT FALL. MEANWHILE, GROUSE HUNTING ENTHUSIASTS LOOKED OVER AN AREA IN THE STANDING INDIAN WILDLIFE MANAGEMENT AREA FOR POSSIBILITIES AS A PLACE TO HOLD GROUSE DOG TRIALS. ONCE TRIAL GROUNDS FOR ALL TYPES OF GUN AND HUNTING DOGS HAVE BEEN ESTABLISHED, THE CHAMPIONSHIP FIELD TRIALS CAN GET UNDER WAY.

THE WILDLIFE RESOURCES COMMISSION HELD A MEETING ON APRIL 2 AT SOUTHERN PINES, AND MADE AN INSPECTION TOUR OF THE SANDHILLS WILDLIFE MANAGEMENT AREA NEAR HOFFMAN. THE SANDHILLS AREA IS HEADQUARTERS FOR PRODUCTION OF BICOLOR LESPEDEZA SEEDLINGS AND OTHER MATERIALS FOR FREE DISTRIBUTION TO FARMERS IN CONNECTION WITH THE COMMISSION'S HABITAT RESTORATION PROGRAM.

Properly cared for and filleted

BIG FISH MAKE GOOD EATING

STATE LIBRARY

By Duane Raver

Fisheries Investigator

Photos By Jack Dermid

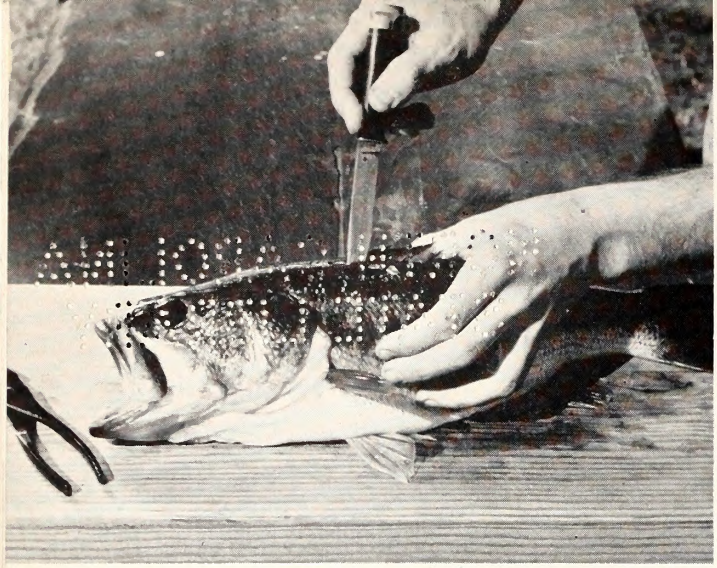
THE care of fish from the time they are caught until they're sizzling on the platter may determine whether they make a delicious meal or a mess the cat wouldn't eat. Most fish are good eating if cared for properly. In a few cases the meat actually is of poor quality and flavor because of some element in the fish's environment—this we can't remedy by utmost care in cleaning. But we can use methods in these operations that have proved successful in the past. This brings up a point that should be noted: the suggestion and procedures that follow in this article are certainly not the only correct methods; however, they are ones which have been used for some time with good success.

Keep Them Alive

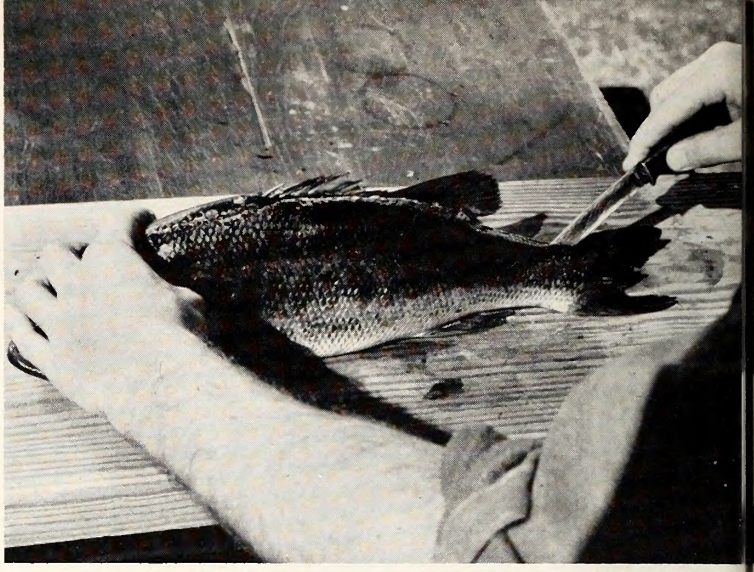
If possible, a fish should be kept alive from the time it is caught until it is cleaned, and you don't want to clean fish until you are through fishing. It is a relatively simple matter to keep fish alive if they are not badly injured and a good metal snap-stringer is used. A fish which has a wire or rope jammed through one gill opening, and is kept that way for any length of time, will soon die. The gills are very easily damaged and are vital to the life of a fish. So use the snap-stringers and clamp the fish through both the upper and lower jaws, but *don't* clamp the mouth tightly shut. The only reason for recommending that the snap be placed through both lips is this: if the mouth is held open continuously, the fish will die. Also don't ever drag a fish along the side of the boat when moving from place to place with the outboard. It is much better to have the fish flop in the bottom of the boat for a time than to let him trail helplessly along side.

Don't try to keep fish alive in a bucket of water. So if you don't have a live box in your boat and you can't string them on a snap-type stringer and leave them in the shade, it would be much better to follow the next best procedure. That is, kill the fish with several sharp blows between the eyes

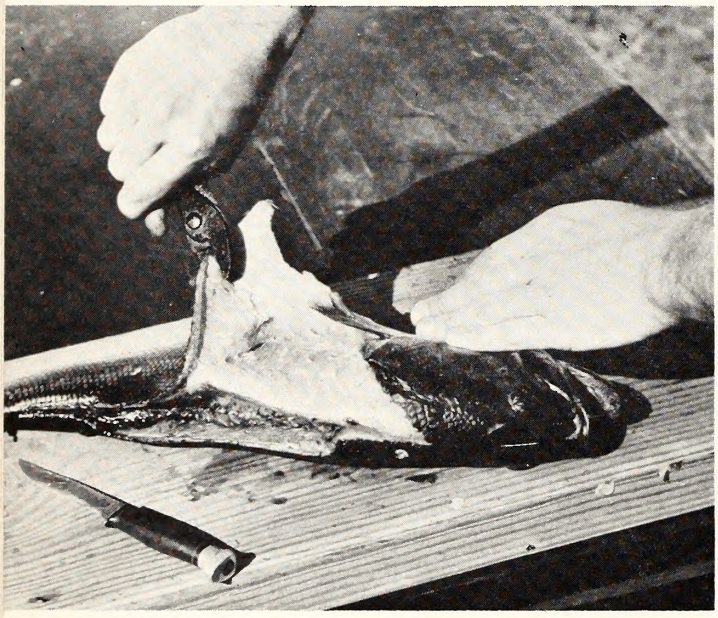
First you must catch the fish! Then see the following two pages of pictures to learn how to obtain fine fillets.



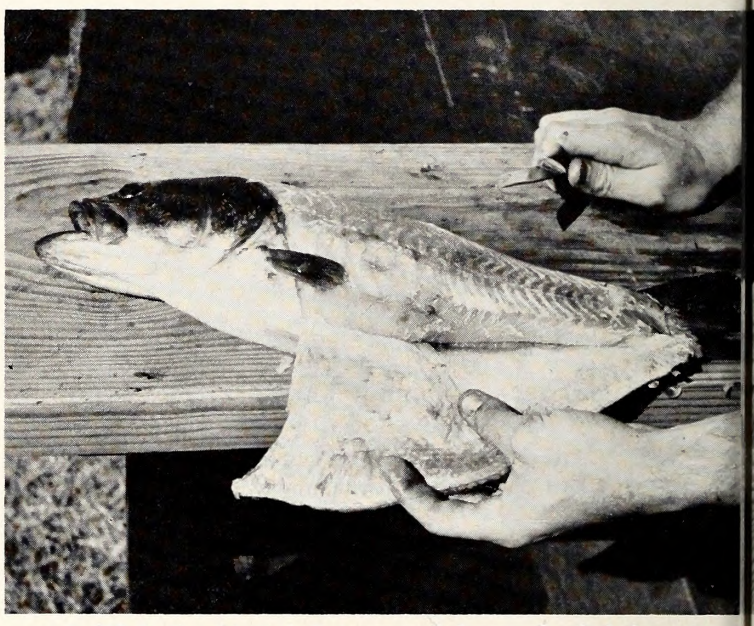
1. To fillet a fish, start the first cut even with the gills and continue it back past the dorsal fin. The incision should be completely through the skin. A freshly killed fish is easiest to clean.



2. After continuing the cut to the base of the tail, make a similar cut along the opposite side of the dorsal fin, thus leaving an incision completely around it.



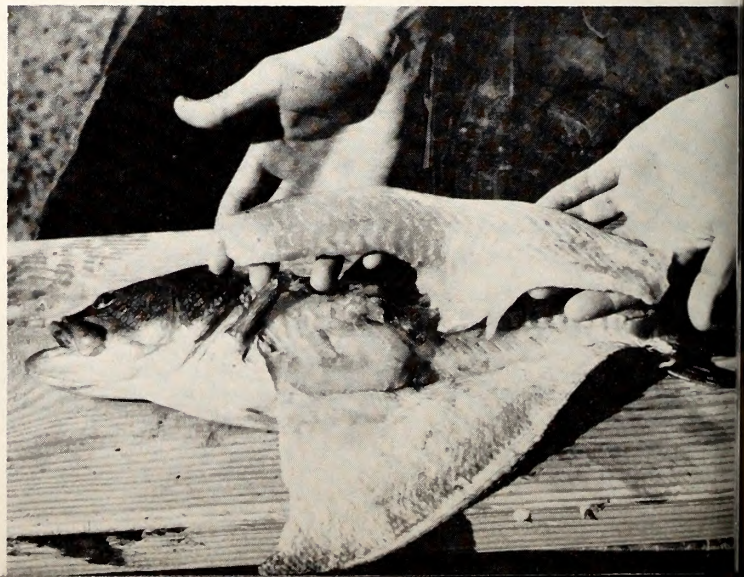
5. Pliers are helpful in skinning the fish. Grasp the triangle of skin behind the head and peel it back slowly. Proceed with caution to keep the flesh from pulling up with the skin.

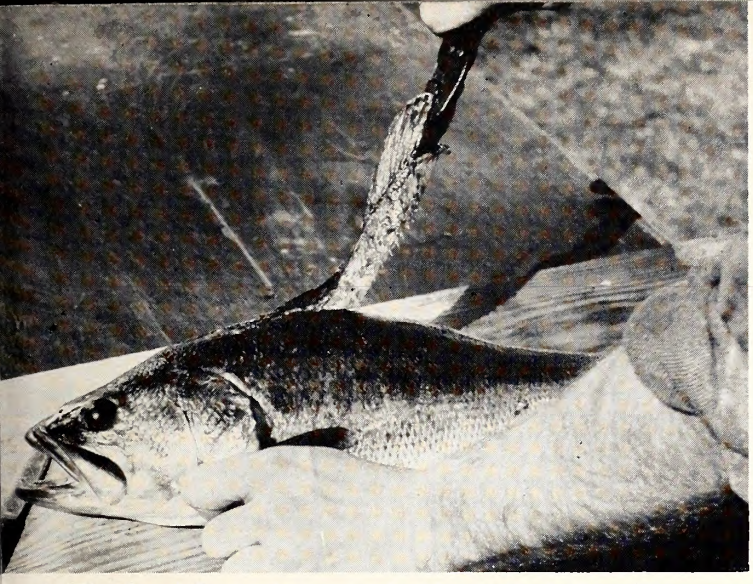


6. While the skin is being removed, loosen the flesh from it with the fingers, rather than depending upon the pliers alone. This operation is not difficult, and very little meat will adhere to the skin if properly done.

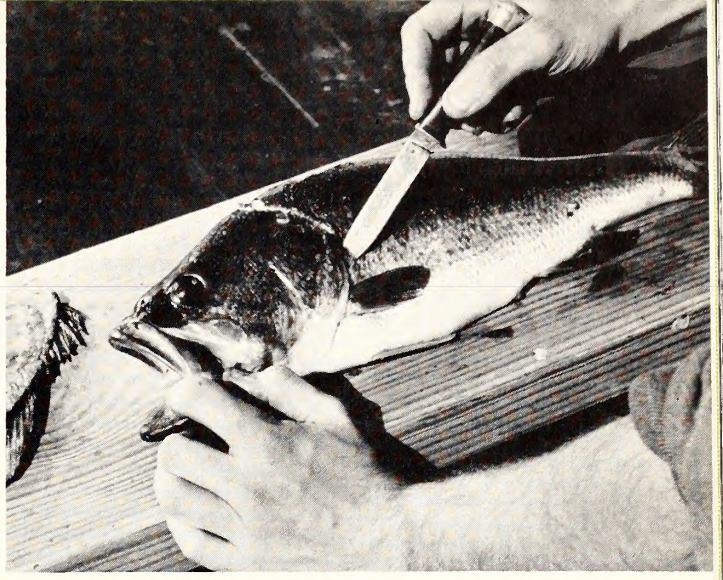
9. Do not attempt to remove the thin layer of meat that covers the abdominal cavity, for it is the source of bad flavors. Now hold the knife tightly against the backbone, and with a sawing motion cut to the base of the tail.

10. The fillet or steak is completely detached now. No more edible meat remains on that side of the fish. Turn the fish over and, following the same procedure, remove the other fillet.

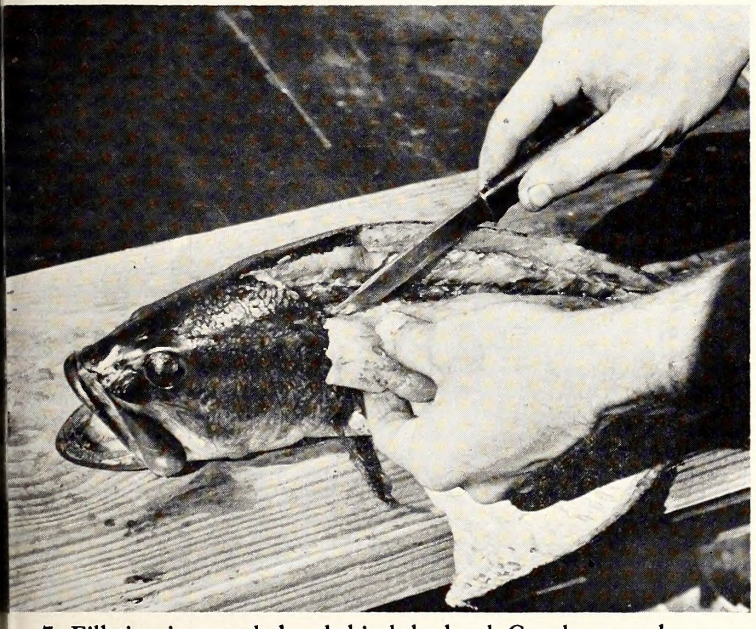




3. The dorsal fin can be removed with a pair of pliers. This step is not essential when filleting, but should always be done with fish too small to fillet since it eliminates undesirable bones.



4. Now begin cuts, only skin deep, just behind the gill openings and continue them back of the pectoral fins into the belly region. Care should be taken not to cut too deeply and penetrate the abdominal cavity.

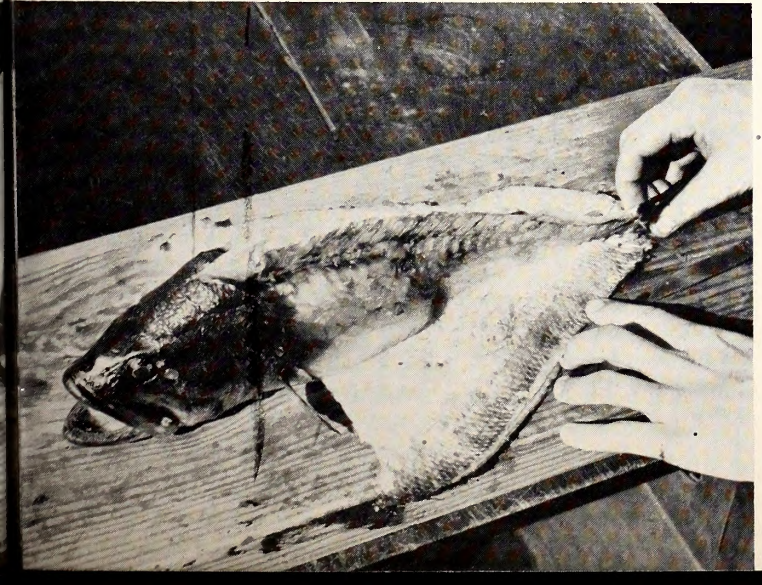


7. Filleting is started close behind the head. Cut down to the ribs, but not through them. Keep the knife blade as close as possible to the up-right bones on the spine.

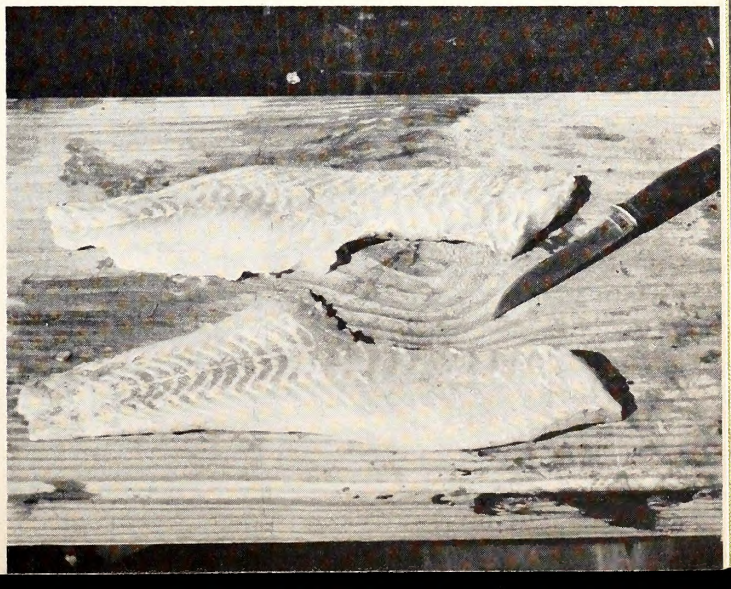
8. After making the first cut, work the knife back over the ribs, still keeping the blade along the backbone. With care, it is possible to remove most of the meat from the rib bones.

Photos by Jack Dermid

11. After both fillets have been removed, only waste parts remain—head, skin, tail, and insides. No time has been wasted in cleaning the abdominal cavity or in scaling the fish.



12. The end product: two thick and boneless steaks. They will make fine eating when fried to a golden brown. Read the accompanying article for complete details on the care and preparation of fish.



with the handle of a knife or pliers or a hammer. Then remove the gills—every bit of them, because when spoilage starts in a fish, the gills are the first to go. The viscera can be removed by slitting the belly. *Wipe* the body cavity dry with grass or paper but *don't* wash the fish *now!* Water will only hasten spoilage and the fish is already clean enough for the moment. It's always a good idea to place some fresh grass or ferns in the body cavity to let air circulate freely. Be careful, however, not to let the flesh get too dry. This will happen unless the fish is put in the coolest shade available and covered with a cloth or grasses. Just remove the gills and entrails and keep the fish as cool as possible. The flesh should stay fresh all day. Of course the better method is to keep the fish alive until you are ready to clean it. By the way, a freshly killed fish is much more easily cleaned by the method pictured on the next page than is one that has been dead all day.

Preparing The Fish

Now, after we get the mess home (and sometimes it looks like a mess after a hard day of fishing), then what? Well, one of the accepted procedures (if you can get away with it) is to smile sweetly and hand the flopping bunch of critters to the wife and walk nonchalantly away. This leads to interesting results, and may help raise the divorce rate in the country. But a more serious result is the stuff that may come to the table under the name of fish! So why not clean them yourself and even kibitz in the cooking of them??

To make the statement that *all* fish sould be skinned rather than scaled is carrying it just a bit too far. So let's say most fish should be skinned for best results in cooking and eating. Skinning is preferable (almost mandatory in many cases) for several reasons. (1) Much of the distasteful "muddy" flavor is locked in the skin and no amount of scaling and scrubbing will remove it. (2) Skinning makes filleting much easier which in turn eliminates the bones and the sour taste of the belly meat. (3) The whole operation is less messy and just as quick once you get on to it.

Why Fillet?

Now, we can go one step further and ask why steak or fillet the fish? In many instances, particularly with small bass and panfish, filleting is not practical, and we will get to that later, but with medium sized fish, the filleting method is by far the quickest, cleanest, and gives the best results in clean, boneless meat. And it's all good meat. One of the usual objections to this method is that some of the meat is lost or wasted. Well, you do lose meat, particularly around the abdominal region, but it is certainly not wasted because it is this meat that has the bad taste which makes the rest of the flesh unpalatable. And if you are careful you waste very little. Notice the backbone of the fish after the fillets have been removed; there's not much flesh there and what is there is full of bones. It the fish is too small to steak or fillet, go ahead and skin it; but merely cut off the head and tail, *pull out* the dorsal and anal fins, remove the entrails and fry it whole or split down the middle.

After the fillets have been removed from the fish (or the smaller fish have been cleaned), wash them thoroughly in cold, fresh water. Don't scrape the meat, merely wash it well. If the meat is to be cooked at once, no further preliminaries are necessary. However, if freezing is contemplated, or the meat is to be kept for a few days, dry the flesh thoroughly as possible with paper toweling or cloth. If the meat is to go into a deep-freeze, merely wrap it in waxed paper and label it as to species, date, or other data desired, and freeze it rapidly. The meat may be kept several days in the cooler section of the refrigerator but should be wrapped tightly or the meat will dry out. Some cooks prefer to soak the meat in saltwater solution for a few hours prior to cooking, but unless the flesh is old or questionable in quality, this is not necessary.

Careful Cooking

The cooking of fish is something that must be learned by experience and it is certainly difficult to explain the best procedures. A few pointers should be noted, however. First, cook all fish thoroughly. This doesn't mean to burn it or dry it up to unpalatable chunks, but make sure large pieces are cooked all the way through. Second, and this follows closely with the first suggestion, keep the meat fairly moist while cooking. The borderline between dried out fish and that which is watery and falling apart is very narrow and here's where experience is necessary to get what you want. Third, keep the methods of cooking simple—especially at first. Plain old frying is hard to beat when plenty of grease is available. Broiling the fillets breaks up the monotony, but here again caution should be taken not to let the flesh dry out excessively.

So, there you have it. Make the best of all the fish you catch, because this certainly is a part of good conservation.

Natural selection works best in polygamous animals and birds, biologists in the Fish and Wildlife Service, Department of the Interior believe. Young males in herds of wild horses, cattle, deer, turkeys, pheasants and other polygamous species are seldom allowed to breed as early as they are physically able to do so. They must first prove capable of surviving the elements and predators for a time, and then must compete with other males for the female's choice. This almost invariably involves the demonstration of superior physical attributes and talents.

HATCHERY *versus* WILD TROUT

By MAURICE BRYANT

Trout Production Supervisor

THIS one subject probably has been discussed more by trout anglers than any other single topic concerning their favorite sport of fishing. Opinions have been varied but positive; the general consensus being that there just isn't any comparison between a hatchery reared trout and one spawned and reared in its native habitat. "By all means, and in all respects," says the fisherman, "the wild trout is far superior to its tame, hatchery reared cousin."

As both an avid angler and hatchery man, I should like to put in my two cents worth. To come right out in the open, I don't believe it! Not in the majority of cases, at least, popular belief to the contrary notwithstanding.

How about wildness and fight you ask? Well, as to wildness, possibly the wild trout is superior, but as to fighting ability, this is not always the case. Wildness is generally due to a fear of man, and I agree that most hatchery reared trout have little fear of man when first placed in a stream. This might be corrected by holding all hatchery trout in more natural surroundings and leaving them alone for a prolonged period prior to stocking, but the cost of the physical plant which this practice would necessitate prohibits such a course. The more desirable procedure is to get the hatchery fish into the streams some two or three weeks before the fishing season opens, and let them become wild by looking for natural food. As to fight, that is something else again. I have caught many so-called wild trout that were just too fat and lazy to put up much of a scrap. On the other hand, I have seen well conditioned hatchery trout that really put up an argument. If you don't agree with this, just visit one of your State hatcheries during the spawning season sometime, and watch the men try to handle a well developed trout while waiting for it to calm down to a point where it is safe to take the eggs or sperm.

Next, the usual argument runs to color. Hundreds of anglers have told me they can positively identify a hatchery trout in their catch by its color. "T'aint necessarily so". The color of a trout, be it brook, rainbow, or brown, depends entirely on its surroundings and diet. Ever notice that a trout caught out of clear water over a light colored gravel or stone bottomed stream is light colored, and often lacking what could be truly called brilliant spots; and that one caught out of a dark section of water is usually dark itself and the colored spots really stand out? Notice this next fishing season and I am sure that you will find it to be the case nine times out of ten. Food also plays an important part in the coloration of trout. It is true that a trout getting nothing but its natural diet of worms, insects and small fish is likely to be highly colored, but a hatchery trout fed a diet of foodstuffs nearly approximately those basic ingredients will also be highly colored.

Of course, too, a trout can be colored artificially by adding a small amount of paprika to its diet for a few weeks prior to stocking. However, the color of a trout changes so rapidly that this latter practice is not generally deemed worth the cost. Just in case you do not believe that a trout can change color fast, visit one of your North Carolina Wildlife Resources Commission's hatcheries during the months of January, February or March when most of them will have small fingerlings on hand. Ask the hatchery superintendent about this. I am sure he will agree, and if he has time he will be glad to take a few fish out of a black trough and place them in a light colored container, or vice versa, and you can see with your own eyes that the fish will change its shading in a matter of minutes. Large fish, of

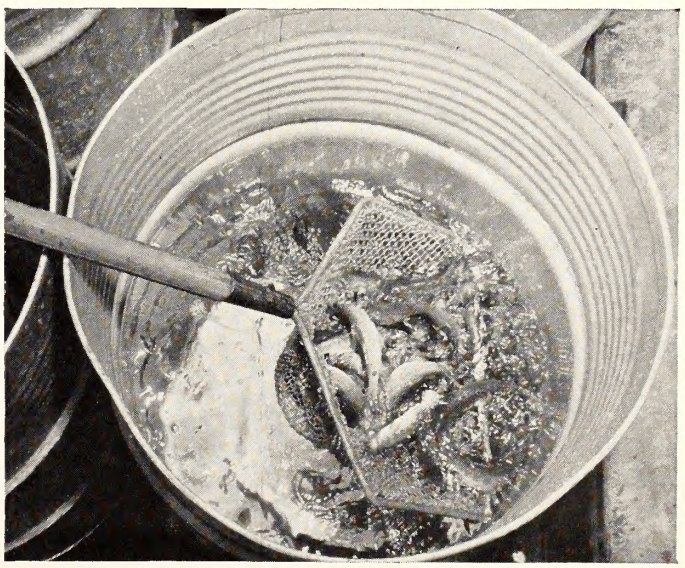


Photo By Rod Amundson

Contrary to popular belief, wild trout are not always superior to hatchery reared trout.

course, change color more slowly, but even an eight or nine inch trout will change in a matter of a few hours. Therefore, I believe that any trout that you may catch, unless it was stocked within a very few days, cannot be readily identified by its color as either hatchery reared or wild. Two weeks in natural surroundings and on a diet of natural food will usually make such identification impossible.

How about taste or flavor you ask? Again I would be willing to place a small wager that there is only a fifty-fifty chance that an angler can guess correctly. I am sure that any qualified nutritionist will agree with the statement that the flavor and quality of the flesh of any animal, including fish, is controlled almost entirely by what the animal eats. What about "liver" fed fish? That, my friends, is a thing of the past. It is extremely doubtful if a single liver fed trout has been caught in the State of North Carolina for many years, unless it came from some private pool. Neither the State nor the Fish and Wildlife Service makes a pratice of feeding liver to trout today. The very high cost of the product prohibits its use as a fish food after the fish reach a size of one and one-half inches in length. Again there is the fact that the flesh of a fish changes in a comparatively short time with a change of diet. For an example, take the catfish or bullhead. I remember quite well, and perhaps some of you do too, that in our younger days, it was a common practice to take bullheads caught out of muddy, warm waters and hold them alive in racks or wire boxes placed in clear, cold running water for a few days, after which time they were of excellent flavor. The flesh was firm and there was no muddy taste. Trout, of course, do not generally need such treatment, since they normally do not live in warm, muddy or polluted waters.

Other than developing a fear of man to make them really wild, which soon results from living in natural surroundings, I doubt very much if anyone can positively identify a hatchery reared trout as such after two or three weeks in a good trout stream. The hatchery trout has been unjustly maligned too often. Who is qualified to say, "This trout is a hatchery fish", or "That one is a wild fish"? I have been a trout fisherman for over thirty years and a hatchery man for fifteen, and I do not feel qualified to make positive identification either in the creel or on the dinner table. Too often I have seen colorless and almost tasteless or even muddy tasting trout come from waters which I knew had not been stocked with hatchery fish for several years. It all depended on the conditions under which the fish live and on their food.

All in all, considering the fine quality of most of North Carolina's trout streams, the fact that the State does not stock any poor or polluted waters as a matter of policy, and the fact that the hatchery men are constantly using the very latest information available to provide a diet for their trout most like a natural diet, I am sure that the Nimrods of this great State can expect to catch as fighting, as colorful, and as well flavored trout as can be found anywhere.

BACK-YARD CONSERVATION

THE GRASS IS GREENER IN YOUR OWN BACK YARD

By BILL HAMNETT

Wildlife Education Representative

Many people today are moving into new houses or changing their place of residence. The first thing most of them think about is developing their property so it will be more attractive than their next door neighbor's. If you are going to make some improvements, or if you have put it off until now, here is a suggestion well in keeping with the idea of back-yard conservation.

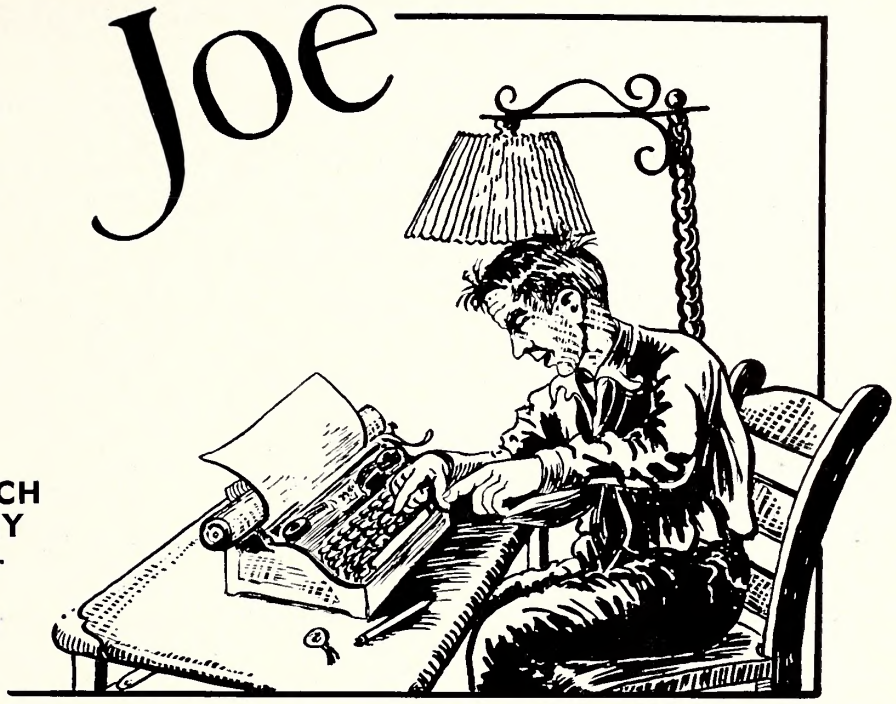
Nothing adds to the beauty of a home like well placed shrubs. And shrubbery serves many purposes around a home. One purpose, other than providing beautiful flowers, color, and additional shade, is that of providing nesting sites and a source of food for birds. You may not realize it but in many towns of North Carolina are covies of quail and scores of rabbits.

The following list of shrubs will be helpful in planning a yard so plants will be grown that produce food for the entire year and furnish additional nesting sites as well as protection, and, together, these will make your home more attractive and enjoyable.

Shrubs suitable for back yard use are:

SHRUB	WHERE GROWN	TYPE OF SOIL	FOOD QUALITY	FRUITING SEASON
Bayberry	Coastal, Piedmont	Damp	Excellent	All year
Beautyberry	Cultivated	Damp	Good	July-January
Bicolor lespedeza	All over State	Sandy or upland	Excellent	August-February
Chokeberry	All over State	Damp	Excellent	July-March
Dogwood	All over State	Upland	Good	Fall
Eleagnus	Cultivated	Garden Soil	Good	Summer
Elderberry	All over State	Lowground	Excellent	July-October
Mulberry, Red and White	Woods	Upland	Excellent	Summer
Plum, Chickasaws	Coastal, Piedmont	Sandy	Good	Summer early Fall
Pokeberry	Cultivated	Upland	Excellent	Fall
Privet	Cultivated	Garden soil	Good	Winter
Rose, Multiflora	Coastal Piedmont	Sandy or Upland	Good	Winter
Viburnums	Cultivated	Swamp and Upland	Excellent	Fall
Holly	All over State	Upland	Good	Fall-Winter
Pyracantha	Cultivated	Garden soil	Good	September-March
Shadbush	All over State	Damp Upland	Excellent	Summer
Hawthorne	Cultivated	Upland	Excellent	All year

Dear Joe



Wildlife Resources Commission
Raleigh, N. C.
Gentlemen:

WHERE CAN I EXPECT TO CATCH TROUT WITHOUT PAYING ANY SPECIAL FEES EXCEPT MY FISHING LICENSE?

Yours truly,

Joe Doaks

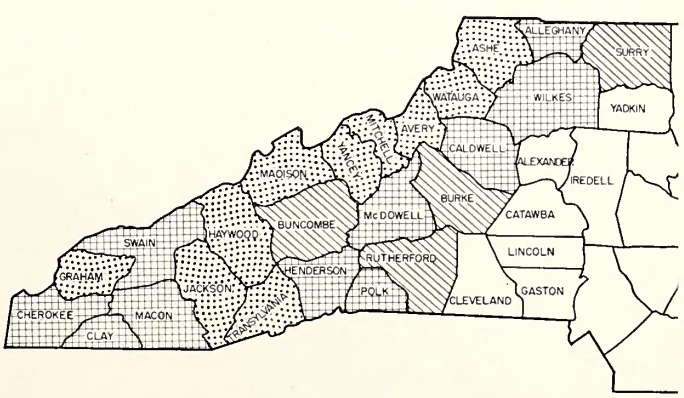
Dear Joe,

That's a fair question. The boys in the western part of the state know the streams in their own counties, but you fellows farther east have little chance to get acquainted with the streams of the trout country. It's too far from Currituck or Brunswick to the mountains to spend a whole week-end trying to find a trout stream which has been stocked and which is not plastered with "No Trespassing" notices.

There are such streams—lots of them—and there are some in every county where trout are found. The best of these streams have been posted by the Wildlife Resources Commission as "Designated Trout Waters," which simply means that because there are few fish in them except trout they are closed to all fishing except during the open trout season. Not all of the trout waters which are open to the public have been designated by any means, but when you see the "Designated Trout Waters" signs along a stream you know that it is one of the better streams for trout fishing, that it has been stocked by the Wildlife Resources Commission, and that it is open to the public without any special fee being charged. Until you have time to do some investigating on your own, they are the streams to look for, Joe. There are just about an even thousand miles of them in western North Carolina.

That's the beginning of the answer to your question. Now let's take a look at a map and see which counties can be expected to have the largest available supply of trout. Take Burke, Rutherford, and Surry, for example. They are on the border line of the trout country, and many of their streams are too warm for trout to live in them in the summer. The trout streams they do have may be just as good as those to be found anywhere else; but as trout producing counties, we could rate them as only "Fair." Buncombe would have to be listed in the "Fair" group, too. It contains a great number of fine streams, but many of them are privately controlled and are not open to the public for fishing. Let's divide the other twenty counties into two groups of ten each. Then we might list as "Good" the counties of Alleghany, Caldwell, Cherokee, Clay, Henderson, Macon, McDowell, Polk, Swain, and Wilkes; and as "Best," the counties of Ashe, Avery, Graham, Haywood, Jackson, Madison, Mitchell, Transylvania, Watauga, and Yancey.

It's a tough job to divide a list of twenty counties down the middle and say that some are better than others so far as trout fishing is concerned. There is mighty little difference between them at the dividing line. Before the boys in the mountains get out their feathers and tar pots and start after me, let me say that there is nothing official about the list. It



This map is not official. It merely indicates a comparison of what is believed to be the total number of trout in public waters. Dotted areas probably have most trout, striped areas fewer, and checked areas in between.

is entirely based on personal opinion, and if anyone else wants to make a different list it is probably just as good as this one. Trout fishing is like some of the other important things in life, Joe. Remember the old quotation—"It's all good. Some's just better than others."

Now, in order to finish answering your question, let's list all the counties in the trout country and pick out a stream or two in each one where you might expect a good catch. These are not necessarily the best streams in each county; but they are all stocked streams, open to public fishing, and large enough so that you can expect some fish to be left in them after noon of the opening day.

Alleghany—South Fork of Little River just above the old mill, and Cranberry Creek.
Ashe—North Fork of New River above Sharp Falls.
Avery—North Toe River and Linville River.
Buncombe—Rocky Broad River except where trespassing is prohibited, and the upper portion of Ivy River.
Burke—Linville River, both below the falls and below the powerhouse.
Caldwell—Buffalo Creek, particularly from Patterson to Buffalo Cove.
Cherokee—Valley River above Andrews.
Clay—Buck Creek, and Nantahala River from the lake to the mouth of Buck Creek.
Graham—Little Snowbird Creek, and Big Snowbird Creek above the mouth of Little Snowbird.
Haywood—West Fork of Pigeon River from Woodrow to Lake Logan, and the lower six miles of the East Fork of Pigeon River.
Henderson—Green River.
Jackson—Tuckaseigee River above East La Port, and Tuckaseigee Lake.
Macon—Cullasaga River, and Nantahala River below the powerhouse.
Madison—Big Laurel Creek from Rice Mill dam to Laurel Falls.
McDowell—North Fork of Catawba River above Pitts.
Mitchell—Cane Creek near Bakersville, and Rock Creek.
Polk—Pacolet River above Lynn.
Rutherford—Rocky Broad River from Lake Lure to the county line.
Surry—Ramey Creek above and below Low Gap.
Swain—Nantahala River.
Transylvania—North Fork of French Broad below the Pisgah Forest, Toxaway River, and West Fork of Broad River.
Watauga—Middle Fork of Watauga River from Boone Dam to Lake Chetola, and the upper portion of Howards Creek.
Wilkes—East Fork of Roaring River, both above and below Joynes P. O.
Yancey—Cane River from Bowlens Creek to Highway No. 197 bridge, and South Toe River to the mouth of Locust Creek.

Sorry that we cannot give you a map showing all these streams, Joe, but we do not have any for distribution. The Wildlife Protectors in these counties know the streams and how to get to them, though. They will be glad to give you the straight dope, and so will most of the fishermen who live near them. You will find that they are a bunch of swell fellows who will be glad to give you directions and advice on local conditions.

This list of streams is just to give you a starting place in the sport of trout fishing, too. You will find posted at the court house door in each of the trout counties a list of all the "Designated Trout Waters" in that county. We can't start to publish them all here, but we have listed some of the best so you can have a selection for your first trip. That's the best we can do in answering your question.

It is unfortunate that trout are so specific in their housekeeping requirements. We would like to stock them in every county in the state so you would not have to travel so far, but they must be put where they can live. However, you have just as much interest in those trout as anyone else. Your license money helped to raise them in the hatcheries and to stock the streams. They have been stocked in water where *all* licensed fishermen have an equal opportunity to catch them. So now it's up to you, Joe—go get e'm!

Best wishes,
Harry Cornell

PISGAH WHITETAILS LONG-LIVED

For an animal its size, the white-tailed deer does very well in the highly important matters of self-preservation and self-perpetuation, according to the Wildlife Management Institute.

Proof of this statement is offered by the Virginia Commission of Game and Inland Fisheries, which reports that two deer taken in Smyth County during the past season bore ear tags reading "Pisgah 1938." These were two deer brought into Virginia from the Pisgah National Forest in North Carolina 12 years ago in an attempt to restore a deer population in the national forests of the Old Dominion. Both deer, therefore, were at least 12 years old and the veterans of a number of hunting seasons. The restocking program that brought these deer into the Virginia mountains was probably the largest and most successful program of its kind in the history of wildlife management. An original planting of 1,783 deer in the area has increased until the Commission now estimates that 40,000 deer roam the mountainous sections of the state.

MORAL: *Don't Desert Your Dog*

Bob Perry, Wake County wildlife protector, pets a valuable pointer which provided evidence leading to the conviction of its owner in recorder's court recently. When Perry approached two men hunting out of season, they ran into the woods and disappeared; but their dog came to Perry with a quail in its mouth. Result: fifteen dollars fine and seventeen dollars costs.

MT. OLIVE GARDEN CLUB PROMOTES CONSERVATION

By Lunette Barber

Wildlife Education Representative

Photo By Bill Hamnett

Members of the conservation committee of the Mt. Olive Garden Club judge bird houses entered in the grammar grades' contest. Left to right: Mrs. C. W. Oliver; Mrs. A. G. Cox, chairman, conservation committee; Mrs. R. B. Warren; and Mrs. Virginia Hill, president, Mt. Olive Garden Club.

"When you make room for beauty, you cast out ugliness," said Donald Culross Peattie recently, and the Mt. Olive Garden Club is actually proving this statement by its activities. Last fall the conservation committee of the club planned to establish Mt. Olive as a bird sanctuary. No sooner planned than done. The committee knew that it could be done through an Act of the General Assembly or through their City Council. Agreement was made to have it done through the City Council because the committee felt that if it were done through the General Assembly it would seem like another *law* to be obeyed. Instead a proclamation from the mayor sounded more like "Let Us Protect" instead of "Don't Kill."

Immediately after the proclamation the traffic division of the State Highway Commission erected the signs on each highway leading into town. The garden club's interest did not end after the signs were erected. Before the paint had time to dry, an education program was planned to teach the adults and children the economic and aesthetic value of birds.

The club secured a wildlife representative to speak at its November meeting; wildlife movies were shown at the November PTA, and with the approval of the principal of the Mt. Olive school, E. S. Simpson, bird lectures were given in the school; and an ornithologist gave an illustrated lecture of local birds and their nests and habits. The club then sponsored two contests—a bird poem contest in the high school and a bird house building contest in the grammar grades.

Still the program continues. A prize has been offered by the club to the boy or girl who observes and completes the best record of a family of birds raised in a house entered in the contest and erected this spring.

The Mt. Olive Garden Club realizes the importance of conservation of our natural resources, and, realizing the economic as well as the aesthetic value of birds, it is eager to carry on this most worthwhile project—Conservation—by beginning with a bird sanctuary.

The following poem was awarded first prize in the bird poem contest:

A ROBIN

What is prettier to see
Than a robin in a tree?
She builds with mud a cozy nest
And shapes it with her yellow breast.
When you hear her music ring
It is the sign of early spring.

Lawrence Wilson, Student
Mt. Olive High School

WILDLIFE PROTECTOR HONORED

Hugh Robertson, Iredell County wildlife protector whose heroism was credited with saving Mrs. Jim Potts and her children from death by fire, was honored on the Mutual Broadcasting System's "Tell Your Neighbor" program Tuesday, February 20. The Robertson case was called to the attention of officials of the program by WSIC (Statesville) listener, Mrs. C. H. Sides. Mrs. Sides wrote an account of how Robertson, a next-door neighbor, awaked one night to see the Potts' home in flames. Mr. Potts was away in service at the time. Robertson ran across the yard, broke down the door, and rescued Mrs. Potts and her three children. In making the rescue, Robertson sustained severe cuts from flying glass. In addition to receiving the Golden Rule Award, Robertson received a Whittenauer watch.

SOIL and WILDLIFE

• CONTINUED FROM PAGE 9 •

Soil erosion also is an enemy of the fishing and oyster business. Back in 1880, the Chesapeake Bay, for example, produced 13 million bushels of oysters, but the annual harvest today has shrunk to only about 3 million bushels; and, for the nation as a whole, oyster production has dropped 50 per cent in 50 years. Dr. R. V. Truitt, founder of the Chesapeake Biological Laboratory, is quoted as having said:

> "Poor management of the land around the bay and lack of conservation practices is responsible in no small degree for the declining oyster production. Unless the land is properly managed, erosion will bring about a further decline in oyster yields."†

There is no need to go into further detail with respect to the bad effects of soil and water wastage on wildlife. It boils down pretty much to this: Without productive land, and the water that makes it produce, there can be very little in the way of birds, fish, furbearers, or big game. Most of our life-giving soil is found on our farms. Most of the water that feeds our lakes and streams, and a great deal of it that empties into our coastal waters, drains from or across these same farm lands. Thus the necessity of safeguarding our remaining soil and water resources is clear. We still are losing around 500,000 acres of our productive land each year through soil erosion, with all the attendant damages to game and fish which I have mentioned.

The farmlands of America comprise our principal fish and game habitat, and the farmer is our principal game manager. It must be apparent, then, that we are going to get the most effective wildlife improvement, both in quantity and distribution, by keeping this vast farmland habitat in its best producing condition. There is no other way to assure our over-all wildlife populations of the future, just as there is no other to assure our future production of food and other crops except by preserving our good land which produces them.

What the soil conservation districts are doing to this end—the progress the district farmers make in putting the various wildlife-benefiting soil and water conservation measures on the land—accordingly is of special importance to you. There are now approximately 2,275 of these democratic, local units of state government. They cover 1¼ billion acres and include 80 per cent of all the farms and three-fourths of all the land in farms in the United States.

In the 12 southeastern states alone, there were 464 districts by July 1, this year, including 87 per cent of the land (283,513,992 acres) and 87 per cent (1,911,997) of the farms in this southeastern area. But, of course, it is the conservation work that is being done—the actual conservation surveying, planning, and treatment of the land with needed control and beneficial measures—that really counts. The accelerated progress that has been made in this accomplishment likewise is noteworthy, in these states as a whole and throughout the nation.

Our July 1 records showed more than 120 million acres of detailed conservation surveys (land inventory) completed in the Southeastern states, principally on the 164 million acres of farmland in these states. Meanwhile, more than a third of a million complete conservation farm plans had been worked out in the Southeastern states by July 1—63 million acres, of which 35 million acres had been treated.

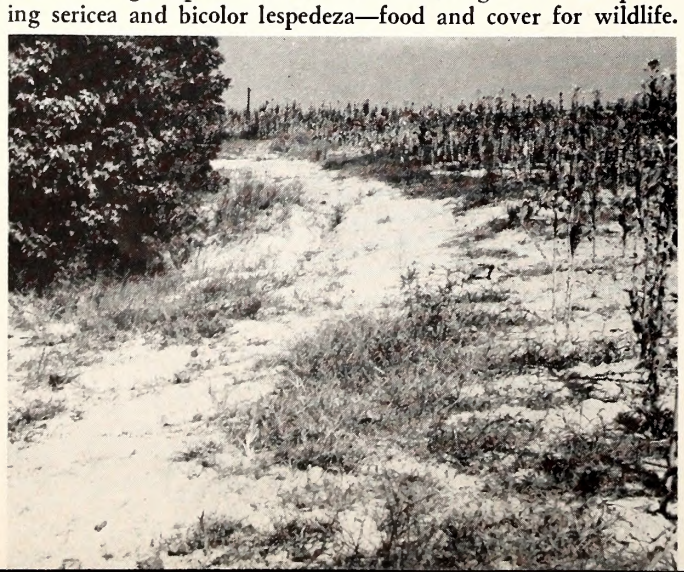
Among the wildlife-benefiting conservation measures going to make up this land treatment in these 12 states I might mention these: 900,000 acres of strip cropping, nearly half a million acres of wildlife area improvement, including field borders, wildlife strips, and wetland improvement for wildlife, 11 million acres of conservation woodland management and about 375,000 acres of tree planting, and 75,576 farm ponds built.

I won't bother you with figures and other details on the different practices, crops, etc. that are involved in this soil and water-saving work, although I do hope that all of you who have not done so already will take the opportunity to familiarize yourselves with these operations in your own states, through your State Soil Conservation Committee or our Service's state office. Better still, get out into these soil conservation districts as often as you can and see what's going on in them.

As I said earlier, I understand all of the Southeast states are among the 35 throughout the country whose game and fish commissions are working with the districts. Such an example as your group has set in this respect is most gratifying. The opportunities ahead for us all to work together toward the common soil and water and wildlife conservation goal are many. There is plenty of need for all that we can do together, whether it is in such undertakings as furnishing districts with such materials

† As quoted by Joe Boyle, "Mystery of the Disappearing Oyster," In Short, April, 1946.

This eroding, unproductive field border is a good site for planting sericea and bicolor lespedeza—food and cover for wildlife.



as sericea and bicolor lespedeza seed and plants for wildlife borders, maintaining cooperative projects for quail, or correcting unprofitable fish populations and controlling weeds in farm ponds.

Let me re-emphasize this, that wildlife is considered by the Soil Conservation Service to be an important and valuable resource which merits fullest consideration in all of our conservation planning. In planning drainage works, for example, we attempt to point out those wildlife values to those with whom we work, and it is our stated policy to discourage drainage of open-water areas where important migratory waterfowl habitat is affected. Because the decision remains with the farmer, however, it is necessary that the wildlife interests themselves present to the farmers a practical program that will in some way compensate them for utilizing their land as waterfowl habitat. In matters of this nature, it will do no good and probably no little harm for the true friends of wildlife betterment to inform the specialists of the Soil Conservation Service that they are in command of the situation and therefore should be held responsible for all that goes wrong with drainage affairs. This is not helping the interests of wildlife or those who do the charging. The facts are well known that the farmers themselves are in command and those who shout about draining land that they say should not be drained would use their time to greater advantage by consulting with and aiding those who are trying to keep drainage operations in line with sound land use, with the interests of wildlife not overlooked.

Wherever the land capability indicates that the land is best suited for wildlife, no conflict is involved, of course. Where the land capability indicates the land can be used safely and profitably for livestock, trees, or cultivated crops, however, it is only right that some incentive or compensation be made available to the landowner if that land is to be devoted to wildlife production. The form that compensation takes, and the way in which it is made available to the landowner or operator, comprise one of the most important problems facing the wildlife profession today.

In all events, it is only through a coordinated land-use plan, based on a careful study of soils, location, engineering requirements, and other factors, that lands unsuitable for farm-crop production may be safeguarded as wildlife habitats. The Soil Conservation Service is committed to continue doing everything it can to obtain effective cooperation with wildlife agencies and organizations, and in encouraging them to work more closely with soil conservation districts. During the past year, in fact, in order that wildlife values be given every reasonable consideration in the assistance we give to the districts, our Service has taken additional steps to enlist the cooperation of such groups.

I have already referred to the way in which wildlife interests for their part, including sportsmen's groups, state fish and game departments, and the rest, are backing up their support of soil and water conservation with physical assistance. That is most important, for the job has only been well begun. In order to finish it, and in time, it is going to take the continued and untiring teamwork of all of us—farmers, soil conservationists, wildlife interests, and everybody else.

Photos by Jack Dermid

These hunters have found a covey of quail in a field border of bicolor lespedeza. Sound land management pays off.

The farmers themselves, business and other community interests, and local, state, and federal government all have found by experience that effective soil and water conservation is profitable and satisfying all along the line. It hardly could be otherwise for anything so much in the public interest. With this continued dedication of our joint best efforts to this vital undertaking of safeguarding our soil, water, wildlife, and related resources, I am more confident than I have ever been before that we are going to do the job—do it right, and do it in time.

I am becoming more and more convinced with every trip of inspection I make in the field. I am seeing an encouraging increase in the rate of soil conservation applied to the land and an advancement in wildlife habitat and wildlife numbers. Week before last a big national publication asked for a freshly-made picture of a gully in eastern Pennsylvania. It was promised but when our photographers went out to get it, they couldn't get it. It seemed unbelievable, gullies had been so common in the localities. I went out with them, but still no gullies. I asked our local boys why it was we couldn't find any gullies. Their answer was the gullies had been closed up with conservation measures, principally with plantings of adaptable vegetation, including in many instances food and cover for wildlife—and I was told that wildlife was "coming back" on many farms.

And just last week I had a similar experience in Wisconsin. And not to overlook a more personal experience, I enjoyed the past summer the call of bobwhites on my 6-acre tract in northern Virginia, where I am getting good results with lespedeza bicolor—and bobwhites, too.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

It is an unavoidable fact that some of our wildlife clubs which did such yeoman work a few years ago have fallen by the wayside. Perhaps one factor more than any other contributed to the demise of these one-time interested groups of sportsmen. That factor was and still is in some instances, the lack of a program. By program we mean an established schedule of activities which appeal to various groups in the club and keep several committees busy. Spring outings, fishing rodeos, shooting games and similar contests constitute the type of activities we mean.

One of the most neglected ingredients for a successful club program is the recognition of senior responsibility to our junior sportsmen. Very few adult groups have established a working relationship with the youth of the communities they serve. It is true that some clubs willingly sponsor prizes and expenses for a contest of one sort or another—but how many youngsters—even the children of members—are invited to club meetings or are taught to shoot or handle fishing tackle as part of a club program?

In every club functioning today there are several members who would be more than willing to serve on committees to sponsor kid activities. In addition, there are people in the community who could be drafted into club membership because of their specific ability and interest in youth work *We must make this work a part of not only our club program,* but, if necessary, the Constitution of the Federation should be amended to take cognizance of such an important responsibility.

The new life that could be injected into an otherwise dull program by the pep, interest, and freshness of youngster participation would be amazing.

There are those among us who feel that we are not getting too far by trying to educate and legislate the adults into better sportsmanship, and it is true that the limited resources at our disposal restrict the extent of our activities. We must reach the children on a larger scale! Therefore, it is necessary that we have help and who can better help than those of you who know the way? Let's take the youngsters fishing this Spring!—W.D.

David Paul of Aurora, N. C., asks, " . . . In the 1949-50 abstract of (N.C.) hunting laws the use of small caliber rifles was outlawed for deer and bear. The 1950-51 abstract doesn't speak of such provisions. Is this law still in effect?"

"Also, is it legal to use a .22 caliber rifle to take Canadian wild geese in the open season?"

It is true that during the earlier season mentioned there was a regulation prohibiting the use of rifles smaller than .25 caliber on deer and bear. This regulation was lifted for the 1950-51 season. It is very probable that there will be a similar regulation in future seasons. Federal regulations prohibit the use of rifles or shotguns firing a single ball in the taking of migratory waterfowl.

Mr. C. H. McCall of Greensboro, N. C., asks, "I have recently heard that whistling swans frequent Lake Mattamuskeet during the winter. If this is so, how late do they stay? Are they in any numbers? Is it permissible to go to the Lake to see them? Are private boats permitted on the Lake? Could you secure the services of a guide to help you find the swans and other waterfowl? How do you get in touch with a guide if they are available for the above purpose?

"I am asking the above with bird watching in mind only. I am not interested in hunting, but in seeing and possibly photographing the birds."

The answer to most of these questions is yes. While most of the various species of birds frequenting the Lake during the winter will start their northward migration before this appears, it should be made clear that the Lake Mattamuskeet Refuge is public property and it may be used and enjoyed by all people. There are excellent accommodations near the area and detailed information may be obtained by writing Mr. W. G. Cahoon, Refuge Manager, New Holland, North Carolina.

Mr. Wray Carter of Reidsville, N. C., asks, "I would like to know why the trapping law was changed this year to December 1 instead of November 15. Three counties in the western part of the state have no fur to trap."

The fur trapping seasons are set with the quality

of fur or primeness as one of the major considerations. The condition of furs when they are taken means much in the form of income to Tar Heel trappers and what may seem to be a season cut actually was an attempt to benefit the trapper.

In response to our repeated requests for stories, questions and general correspondence from the staff in the field, Game Protector Marvin Ward of Durham County sends in this one:

A Durham County hunter was in the field last season with a hound dog. Now, a hound dog usually hunts rabbits, foxes, coons, deer, bear, and sometimes squirrels. This apparently was no ordinary hound because at the time of this story he was not chasing any of the above mentioned species of game. When the dog disappeared in a honeysuckle tangle and failed to reappear, it was natural for the hunter to wonder "wha' hoppened," particularly when sounds of violent thrashings and growlings came from the thicket. Laying aside his gun and fighting his way through the tangle, the man found the dog and a large, active and belligerent wild turkey gobbler enmeshed in each other and the honeysuckle vines! Needless to say, said gobbler was neatly browned and the cranberry sauce added considerably to the flavor.

Skunks are often justly accused of raiding duck nests and of killing ducklings, but skunks also eat quantities of snapping turtle eggs—and snapping turtles kill large numbers of ducklings, the Fish and Wildlife Service points out.

• CONTINUED FROM PAGE 5 •

prolific. Without a species to keep them in check, they would soon become so abundant that food would be exhausted and the pond would be filled with runty fish. The above is a skeletonized example, but it points out a principle of fish management.

Crappies have been stocked with bass as a balancing factor, but this results in competition between the two species for food, and in experiments has been proven impractical. Further, crappies take a heavy toll of small bass. As a general rule, crappies should be considered as denizens of the larger streams, lakes and reservoirs. They can stand heavy fishing wherever they occur, and artificial rearing and stocking of crappies would be just about as effective in providing more crappie fishing as would be turning a garden hose in a lake to raise the water level.

ANGLING

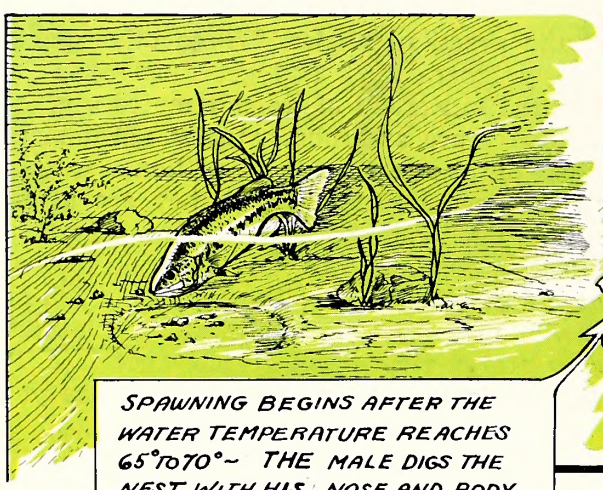
Crappies are among our more democratic species. They would just as soon take the bait of a schoolboy or an aging grandmother as they would the lure of the practiced angler. Where other game fish stolidly ignore lures and get themselves involved in the intricacies of water temperature, atmospheric pressure, and solunar tables, not to mention phases of the moon and the condition of Granddaddy's rheumatism, crappies, if they are at all hungry, will bite in almost any weather a fisherman can endure.

Since crappies bear up well under heavy fishing pressure, it might not be unethical to point out that they are extremely vulnerable, once located. They travel, loaf, and feed in schools. Once you locate a school, it should be no trouble at all to take the daily creel limit. Live minnows, still wiggling on the hook, make the best bait. They may be offered on the end of a fly line, a bait casting rod, or a hickory switch with equal success. Look for crappies around sunken trees, submerged stumps, or under-water rock piles. They like to stay in hiding in sunken brush piles or tree tops and dart out from this cover at passing food.

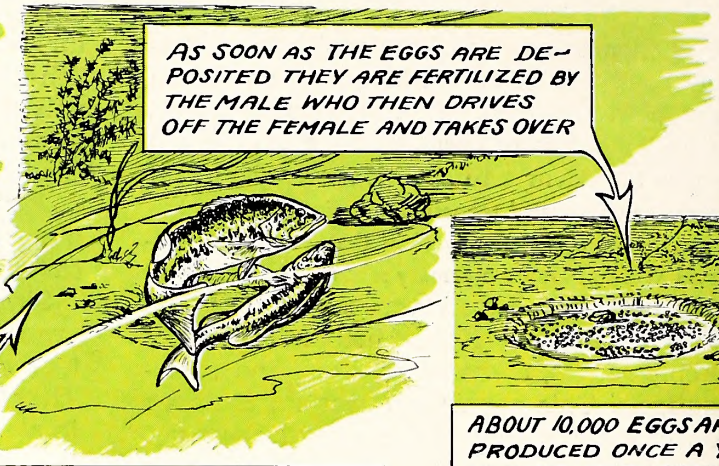
On lazy summer afternoons, when the water is still, crappies sometimes rise to the surface to feed on insects. You can see the small ripples they make when engaged in such activity. A careful approach and careful casting with a flyrod will oftentimes provide thrilling sport. Crappies do not smash at a fly like bass or bream, but once hooked they put up a fair fight. Don't try to horse a large crappie out of the water. Their mouth tissues are tender and many a crappie has been lost because its strength exceeded the toughness of its mouth.

To prepare crappies for the table, don't go to all the trouble of skinning them or scraping off the scales. Either method is messy, and both are unnecessary. Simply scald crappies (or any other panfish) like you would a chicken. The scales come loose and can be wiped off with a rough cloth in a bucket of cool water. Then go ahead with dressing the fish. Fried quickly in deep fat, with or without a batter, crappies are delicious!

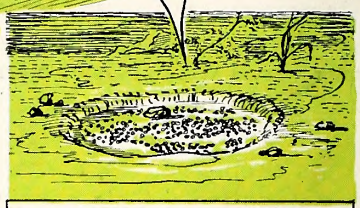
A nice string of crappies. Winter or summer, if they are hungry, crappies will bite in almost any weather a fisherman can endure.



SPAWNING BEGINS AFTER THE WATER TEMPERATURE REACHES 65° TO 70° ~ THE MALE DIGS THE NEST WITH HIS NOSE AND BODY ON A SAND GRAVEL OR MUD BOTTOM

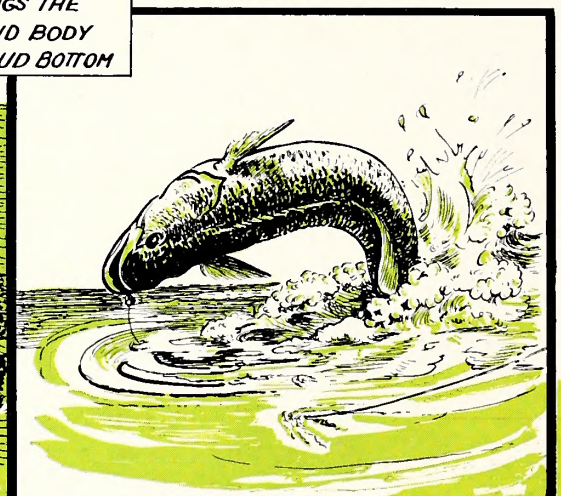


AS SOON AS THE EGGS ARE DEPOSITED THEY ARE FERTILIZED BY THE MALE WHO THEN DRIVES OFF THE FEMALE AND TAKES OVER

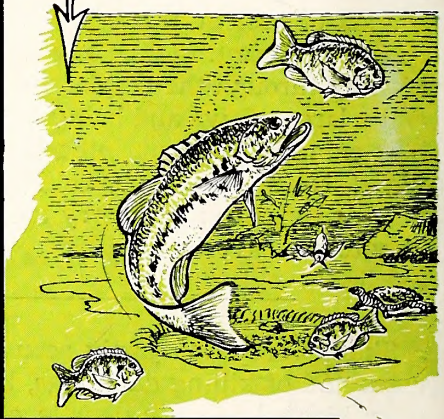


ABOUT 10,000 EGGS ARE PRODUCED ONCE A YEAR IT IS ESTIMATED ABOUT 50% REACH FINGERLING SIZE ~ ONLY A FEW BECOME ADULT

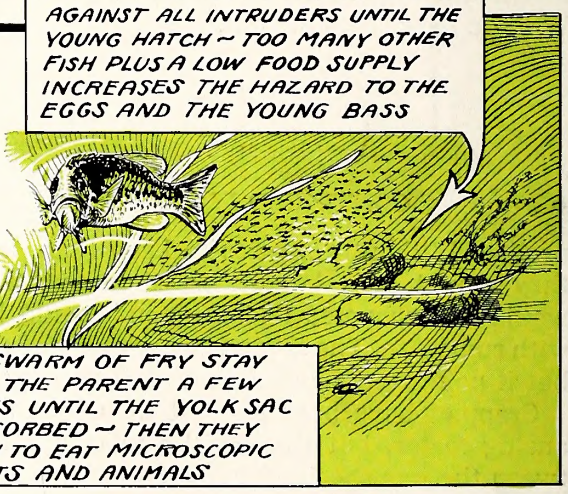
IN SMALL PONDS CRAPPIES COMPETE WITH BASS FOR FOOD ~ EVENTUALLY THE CRAPPIES DOMINATE THE POND



MOST OF THE LUNKERS ARE FEMALES ~ HERE'S GOOD LUCK TO YOU THIS SEASON



THE YOUNG BASS GROW 5 TO 7 INCHES THE FIRST SUMMER AND THE LARGEMOUTH BECOMES A FACT AS WELL AS A NAME ~ THEY TRAVEL AS INDIVIDUALS OR IN SMALL GROUPS ~ THEY EAT DAY AND NIGHT ~ INSECTS SMALL ANIMALS AND FISH FORM THEIR DIET ~ EVEN THEIR OWN YOUNG AT TIMES



THE MALE BASS DEFENDS THE NEST AGAINST ALL INTRUDERS UNTIL THE YOUNG HATCH ~ TOO MANY OTHER FISH PLUS A LOW FOOD SUPPLY INCREASES THE HAZARD TO THE EGGS AND THE YOUNG BASS

THE SWARM OF FRY STAY WITH THE PARENT A FEW WEEKS UNTIL THE YOLK SAC IS ABSORBED ~ THEN THEY BEGIN TO EAT MICROSCOPIC PLANTS AND ANIMALS

Wm Donat

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IN NORTH CAROLINA

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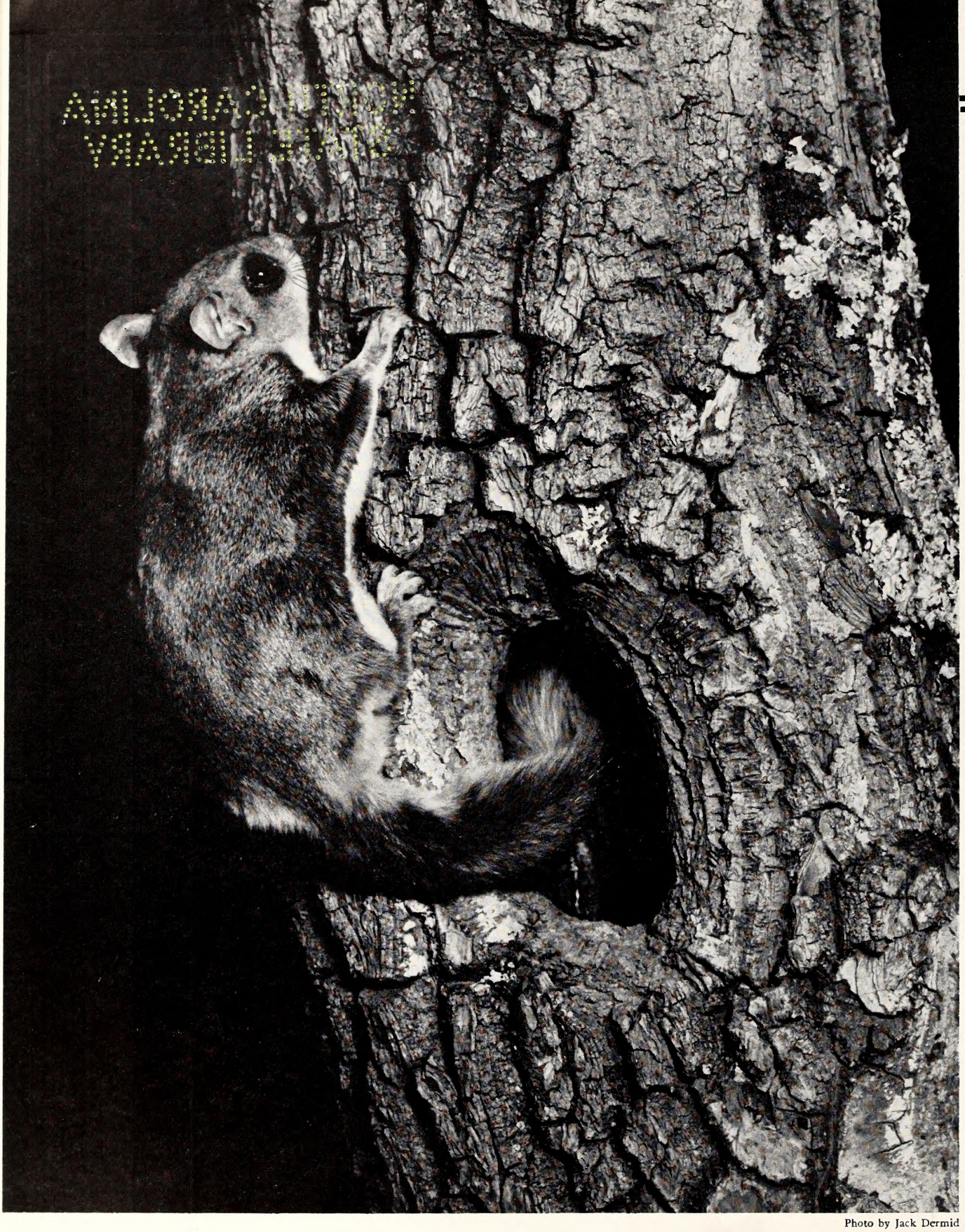

Photo by Jack Dermid

WHEN DARKNESS FALLS —

—a multitude of wild animals, like the big-eyed flying squirrel above, begin their nightly search for food. The night woods are full of life, and an observer with a flashlight will find many surprises.

Wildlife IN NORTH CAROLINA

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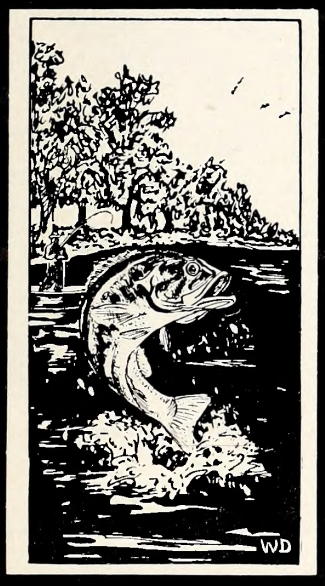
A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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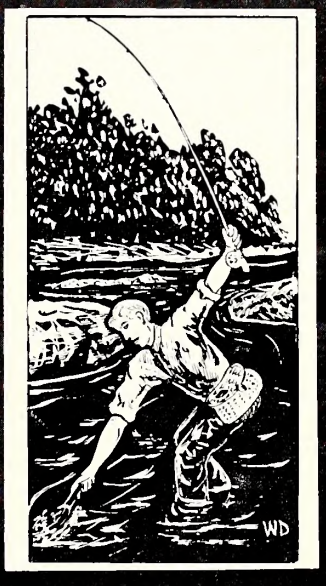

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May, 1951 Vol. XV, No. 5

ROD AMUNDSON, Editor
JACK DERMID, Managing Editor
WIN DONAT, Art Editor
MARTY MABRY, Circulation

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COVER

Win Donat portrays the bullfrog and the Carolina tree frog in a natural setting. Frog songs are familiar outdoor sounds during the spring.

★ ★ ★

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

★ ★ ★

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Frogs come in all sizes. A common cricket frog poses for the photographer atop a bullfrog. Both are adults. Frogs and toads are voracious eaters of any form of life capable of locomotion and small enough to swallow.

LET'S LEARN ABOUT OUR WILDLIFE

The Twenty-eighth of a Series on The Wildlife Species of North Carolina

CAROLINA FROGS AND TOADS

By ROD AMUNDSON

PHOTOS BY JACK DERMID

SONGBIRDS do not have a monopoly on announcing the arrival of spring. Out in the woodlands, in the still, dark forest pools, out in the meadows and marshes, millions of frogs set up a vernal symphony which echoes to the hills a prelude to spring. From late March to early July, it is almost impossible, on a warm evening, to get away from the sound of frogs. The sound may vary from the "E" above middle "C" of the spring peeper to the bass grumping of the bullfrog.

There may be some question in the reader's mind as to why frogs should be included in a series on important wildlife species. Although frogs are classed as neither fish nor game, they provide a great deal of sport, delicious food for the dinner table, and because of the effect they have on insect control, are of vital importance to agriculture.

Frogs, toads, and their close relatives, salamanders, make up a group of animals which lie between fish and reptiles in the biological classification of the animal kingdom. Their life history lends significant support to the theory that all life sprang from one-celled organisms, and that all terrestial animals are descended from those which lived in water. Grouped together, frogs, toads and salamanders are called amphibians. Frogs and toads are very closely related; salamanders, however, differ in appearance and in life history. Mature frogs and toads are always without tails, while salamanders (mud puppies, spring lizards, helbenders) retain long tails throughout life.

While everyone is familiar with frogs and toads from childhood, few people have the interest and take the time to find out how really fascinating these creatures are. Literature is full of stories and references regarding frogs and toads. Toads especially have been surrounded with half-truths and legends. Many people, even today, believe that toads can

shoot blood from their eyes, that warts result from handling them, and that their breath is poisonous. Toads with "blood in their eye" probably get that way in circumstances of extreme excitement when a blood vessel bursts and blood diffuses through the external tissues of the eye. There is no foundation whatever to the tale that toads cause warts. The wart-like lumps on toads are thickened places on the skin containing considerable pigment and glands which secrete a repelling liquid. This liquid is strongly acid, and will repel most predators. It is not poisonous in the usual sense of the word, but a young dog which has mouthed a toad will never again molest a toad. He may lose his appetite for a day or so, and drool profusely, but he has not been poisoned. Skunks are known to eat toads, but will not do so until they have rubbed the victim on the ground until the secretion from the warts has been removed. Frogs may secrete a similar substance from folds in their skins, but not to the degree of profusion that toads do.

Many people are perfectly sincere in the belief that it rains frogs and toads. They come to this conclusion after driving down a paved highway in a heavy rainstorm and seeing thousands of frogs and toads hopping about. Actually the frogs and toads are taking advantage of the heavy rain to move across the road in a migration to or from their breeding pond, or to catch insects knocked out of the air by raindrops.

LIFE HISTORY

The calling, chirping, or croaking of frogs is closely associated with mating. It is during the mating season that most of the singing occurs. Frogs have vocal chords, and thus are the lowest order of animals to have true voices. The amazing thing is, most of the sounds made by frogs are accomplished with the mouth closed. Only when in extreme peril do certain frogs cry out with open mouths. In normal singing air is breathed in through the nostrils, and forced into sacs under the skin which can be inflated to amazing proportions. Then by muscular contortion, the air is forced over the vocal chords so that audible vibration is set up. The inflated voice pouches act as sounding boards and greatly increase the volume of sound. Thus a tiny tree frog less than an inch long can raise echoes from a hillside hundreds of yards away.

Some frogs fill the voice sac with air and then expel it forcefully in a long-drawn "skreeeee . . ." that leaves a wrinkled and deflated fold of skin.

Toads give voice in the same manner as frogs. The sounds may range from dull grunting noises to long wails or soft bird-like chirps. Persons who have made a study of frogs and toads can readily identify them by their voices just as songbirds may be named by their singing.

Although bodily contact occurs during mating, this contact does not resemble copulation in higher

A Southern toad sings with its mouth closed and with its voice pouch inflated. During the breeding season, the males congregate at the water's edge and sing to attract the females.

The eggs of toads are deposited in long, gelatinous strings under water. Below. In several days, tadpoles hatch by the hundreds; but only a few will survive to become adults.

forms of animals. The male clings to the female and fertilizes the eggs as they emerge from her body. The eggs, varying in size and number among species (although not always in direct ratio to the size of the frog) are laid in a mass of gelatinous material secreted from the body of the female. Where frog-eggs are deposited in shapeless masses, the eggs of toads emerge in long gelatinous strings. Depending on circumstances and species, the eggs may float freely near the surface of the water or be attached to submerged vegetation.

All frogs and toads, however terrestial they may become, must spend two phases of their life in water, first when they are deposited as eggs and hatched into tadpoles, and later when they return to mate. Toad eggs may hatch in three or four days, while frog eggs take from a week to ten days, depending on water temperatures. They emerge from the eggs in tiny spherical semi-transparent blobs with long, wiggly tails. Emergence from the eggs may precede complete development of a mouth; as soon as this latter is in working order the tadpoles begin feeding on minute plant and animal life with which marshes and ponds abound.

The length of time spent in the tadpole stage varies among species. In the case of bullfrogs, the tadpole stage lasts a year before the legs begin to develop. The process of metamorphosis from the fish-like tadpole to a full fledged frog or toad is one of Nature's wonders. During the tadpole stage, the youngling has fed with a voracious appetite, and stored considerable "fuel" in the tissues of the tail. The hind legs appear first, in the form of small buds which later develop into useful limbs. The front legs appear later in the same manner. The tail does not drop off. It is completely absorbed into the body during the development of the legs. Meanwhile, the head undergoes a change, with the development of jaws, air sac, and protruding eyes. The wiggle-tailed pollywog has become a frog, or a toad, as the case may be.

Having reached full development, toads leave their watery birthplace and migrate into the woods or meadows surrounding the ponds. Tree frogs, wood frogs, and leopard frogs go into the woodlands or meadows surrounding their pond, and may move for considerable distances away from their place of origin. The following year they return to this or other water to begin the life process anew.

FOOD HABITS

Frogs and toads are voracious eaters of any form of life capable of locomotion and small enough to swallow. No one knows for sure the extent to which frogs and toads keep harmful insects under control. It is certain that they are an important aid to gardening and agriculture.

The food of these creatures must have one essential characteristic. It must move. Many a pet frog or toad has starved to death surrounded by freshly killed but motionless insects. A frog will sit for hours oblivious to a fat beetle resting under his very nose while waiting for a fly or a bug to chance by. When an insect comes close enough to a frog to afford capture, the frog darts out an amazingly long tongue with a motion so quick the human eye cannot follow it. The tongue is coated with a sticky mucous that ensnares the insect and it is flipped down the gullet. Both frogs and toads will eat worms and caterpillars as long as these creatures move enough to attract attention. Toads are fond of earthworms, and will go into considerable maneuvering to get around to the front end of the worm so that it can be swallowed head first. In the case of a large worm, the toad may have to struggle for some time to keep the worm from crawling out from the short espohagus. Sometimes a frog or a toad will swallow more than he can handle, as in the case of the toad that ate a stag beetle and finally had to give it up when the bettle's sharp pincers began cutting up the toad's stomach.

Tree frogs lie along branches and large leaves of trees waiting for leaf hoppers and other small insects to come by. On the other hand bullfrogs, which never willfully leave their native pond, dive to the bottom to collect insect nymphs and other small aquatic life.

HIBERNATION-AESTIVATION

Other than a small amount of body heat generated through physiological processes, frogs and toads are cold blooded; i. e., their body temperature closely approximates that of the surrounding water or atmosphere. In warm weather tree frogs and leopard frogs secrete moisture through their skins to serve the double purpose of getting oxygen into the blood stream and cooling the body temperature. Activity is in direct proportion to weather. In warm weather, frogs and toads are most active. When the weather or water cools they become less and less active. In freezing weather they become almost completely dormant and will burrow into the bottom of a pond or under moist leaves in the woodland and hibernate until warm weather returns.

A phenomenon corresponding to hibernation occurs during the summer time when the weather is warm but a lack of rainfall dries the pond or the surrounding terrain. In such circumstances they go into hiding again and become extremely inactive. This act is called "aestivation." Both frogs and toads can stand considerable freezing as long as the vital tissue is not damaged, and can recover completely.

ENEMIES

Except for the skin-secreted repellent fluid of toads and the agility of frogs, these animals are almost entirely without defense. Hence their enemies are legion. Any number of animals may eat up the eggs. Tadpoles are vulnerable to fish and even large acquatic insects and insect nymphs. Hawks, owls, and other predatory birds feed on mature frogs, and

frogs are a favored food of game fish. Snakes are fond of frogs, as are mink, otters, and raccoons.

Fortunately, single adult females lay thousands and thousands of eggs, and enough of these result in mature creatures to insure the continuation of the breed.

As if any imposing number of natural enemies were not enough, Man has learned that frogs are delicious eating. Only two species are considered big enough for human food. These are the bullfrog and large specimens of the leopard frog.

AS FOOD AND SPORT

North Carolina may some day have to place bullfrogs on the protected list of wild creatures. It might require the wisdom of Solomon, however, to decide whether frogs should be taken by authority of a fishing license or a hunting license. They can be both hunted and "fished". Where bullfrogs have become popular as table food in other states, they have been given legal protection with closed seasons and bag limits.

The meat of frogs is clear, white and of exquisite texture and flavor. In northern cities it commands premium prices in expensive restaurants. The demand for frog's legs has become so great that frog farming has become a profitable business in recent years.

The two most popular ways of getting bullfrogs are gigging (with frog spears) and angling. To gig frogs, frog hunters go out at night with a frog spear and a good flashlight. A little stalking skill enables the hunter to get close enough to the frogs to let fly with the spear. Other hunters go for frogs in small boats, and either spear them or grab them by hand.

In Oregon, bullfrogs are an introduced species and are protected by law. The only way bullfrogs may be taken legally in that state is by angling.

As has been pointed out, frogs will not feed on any object that is not moving. On the other hand, they will lash out their tongues at nearly anything that flashes by them. This makes them highly vulnerable to a carefully cast trout fly. Bullfrogs are shy creatures, and considerable caution must be exercised to approach them close enough for a cast. But once a fly or a bid of red flannel on a small hook has been moved in front of a bullfrog, the frog is hooked.

Although only the hind legs of frogs are commonly eaten, a great deal of good meat is wasted if the back, shoulders, and front legs are not put into the frying pan. Bullfrogs are easy to clean, and the meat resembles nothing so much as a young spring chicken. It can be prepared in the same way as chicken, and a gourmet will tell you it is far better eating.

A word of caution should be extended to the novice frier of frog legs. Frogs are extremely tenacious of life; a freshly killed frog rolled in batter and popped into the frying pan may try to pop out again.

• CONTINUED ON PAGE 20 •

All tree frogs have enlarged, viscous toe disks, and this spring peeper clings with ease to a vertical plate of glass.

The leopard frog has a descriptive name. It frequents damp meadows and along the banks of streams and ponds. Below. A bullfrog plays "possum" under six inches of water.

First in a Series on the Western Wildlife Management Areas.

Standing

By MALCO

Supervisor, West

"FORTY-TWO grouse in one day!" Sounds hard to believe, doesn't it? Nevertheless a party of grouse hunters reported flushing forty-two grouse in a day's hunting on the Standing Indian Wildlife Management Area. Countless coves of birch, poplar, beech, and red haw, surrounded by gentle slopes covered with oak and hickory provide perfect habitat for grouse, turkey, and deer in this beautiful watershed, which forms the headwaters of the famous Nantahala River. Lying between the Nantahala and Standing Indian Ridges in Macon County, the hunting and fishing area consists of approximately 14,000 acres. The remainder of the 28,432 acre management area includes the Coweeta Experiment Station, which, while it is not managed for game, joins the area inside the boundaries for mutual protection. A large part of the area has been logged and second growth timber in the large flats along the river have made wonderful game lands.

This area is one of nine cooperative wildlife management areas covered by a cooperative agreement between the U. S. Forest Service and the N. C. Wildlife Resources Commission. Under this agreement the Forest Service furnishes all installations, such as houses, signs, checking stations, etc., and the Wildlife Commission furnishes personnel, equipment and supplies for protecting, managing, and developing these areas. Proceeds from hunting and fishing are divided equally between the two agencies.

The management area was established in 1937, and between 1937 and 1940, eighty-three deer from the Pisgah Game Preserve were released. In 1943, an additional stocking of 103 deer was made, these deer coming from the Reynolds estate in Surry county, the Pisgah Game Preserve, and the Mt. Mitchell Management Area.

The management area comprises some of the best deer range in western North Carolina, and for this reason the restocking has been very successful. The present herd is estimated at from 500 to 600 deer. The bear population is very small and varies at different times of the year with probably not more than ten or twelve being present at any one time.

Standing Indian has the largest wild turkey population of any of the western management areas. While it is difficult to make an accurate estimate of the number of turkeys present, it is believed that not less than 150 are on the area.

This area has a very large grouse population and has an added advantage of much less precipitous terrain than most of the other areas in western North Carolina. Raccons are numerous and the mountain "boomer" or red squirrel abounds. Gray squirrels have not been plentiful for the last few years.

Managed hunts have been held on the area each year since 1948. The deer hunts usually conform to the open season in the county as to duration. This is normally two or three, three day periods. In 1949, 179 hunters killed fifteen deer, including one of the heaviest deer taken so far off one of the western management areas. This deer weighed 188 pounds field dressed, which would mean a live weight of approximately 230 pounds. In 1950, 147 hunters took

Fish and Wildlife Service Photo

The bear population of Standing Indian is small, but the deer herd is estimated to contain 500 to 600 head.

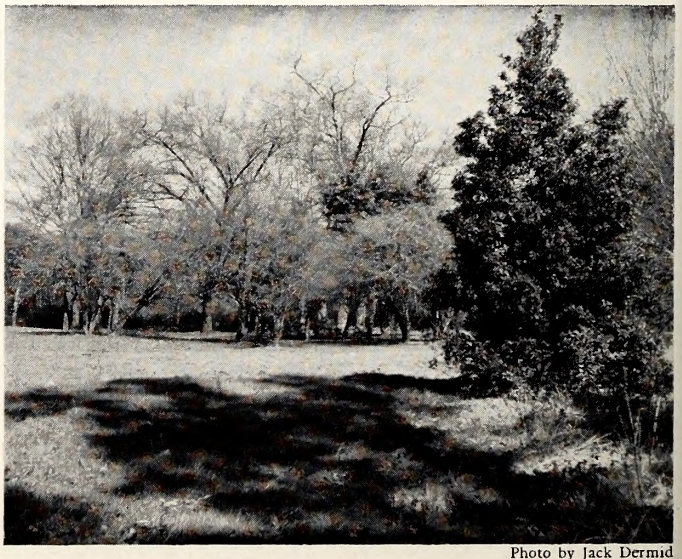

Photo by Jack Dermid

A meadow planted for deer. Red haw, holly, and other food producing trees were left in the field.

Indian

EDWARDS

ldlife Management Areas

twenty-one deer. All of the deer taken from Standing Indian have been fat and with excellent antler development. Over seventy per cent of these deer have had six or more points.

For the 1950 hunts a deer hunting camp was established at the mouth of Bear Pen creek, located about six or seven miles up the river from the protector's station at White Oak Bottoms. This opened up a complete new hunting area which could not be utilized before, due to its inaccesibility.

The hunting season on Standing Indian usually opens with a two week squirrel hunt early in October. For unknown reasons, the squirrel population on Standing Indian has been low for the past few years, and the hunts have not been too successful. This is followed by the deer hunts, which are spaced over a period of one month from the middle of November to the middle of December. The usual schedule calls for three days around November 20, and three days about December 5. Spaced through this same period are two weeks of raccoon and opossum hunting. While the 'coon and 'possum population is high on the area, the number of hunters and the kill has been low, because of bad weather at the time. During the 1949 season, seventy-five hunters took ten raccoon. In 1950, ten parties took five raccoon. Two to three weeks of grouse and squirrel hunting follows this, and all hunting is over by January 7. Although squirrels can be legally taken during most of this hunt, it is primarily a grouse hunt. The large number of old roads, house places, and planted clearing surrounded by rhododendron thickets and red haws provide excellent grouse cover and most hunters report finding from twelve to twenty-five birds in a days' hunt. Here again, the weather has a very decided effect on the kill. In the 1949 hunt, sixty-seven hunters took sixteen grouse, and on the 1950 hunt, fifty-nine hunters took eighteen. The kill would have been much higher during 1950 if the weather had been more moderate.

The Nantahala River and its tributaries provide some of the finest trout fishing in Western North Carolina. Rainbow and brown trout are present in most of the waters, with the native brook trout inhabiting only the headwaters. The brown trout fishing is particularly good on the main river, and many fourteen to twenty-four inch fish are taken from it each year. The fishing for rainbow trout is better on some of the feeder streams, particularly Kimsey, Park, Hurricane, Big Indian, and Bear Pen creeks. Probably the best brook trout fishing is on the head of Hurricane and Bear Pen creeks. The streams are all heavily stocked throughout the spring and summer with six to eight inch fish. The success ratio is very high, usually averaging from four to six fish per man for each days' fishing.

Considerable development work has been accomplished on the area under Pittman Robertson Development Project 28-D. There are many abandoned farm lands present, particularly on Kimsey creek and the main river as far up as Bear Pen creek. These fields were cleaned off, by hand where practical, and where the growth was too heavy, a bulldozer was used. In 1949, twenty acres of rye-vetch,

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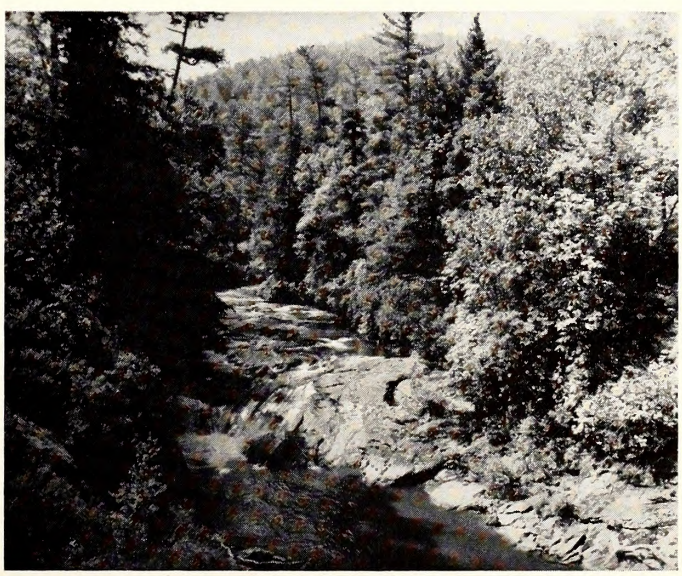
Photo by Jack Dermid

Standing Indian is one of nine cooperative wildlife management areas administered by the Commission and the Forest Service.



The Nantahala river and its tributaries provide some of the finest trout fishing in western North Carolina.

NORTH CAROLINA WILDLIFE RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

FOLLOWING ESTABLISHED POLICY, THE WILDLIFE RESOURCES COMMISSION WILL AGAIN HOLD A SERIES OF PUBLIC HEARINGS IN EACH OF THE NINE DISTRICTS TO GIVE SPORTSMEN AN OPPORTUNITY TO EXPRESS THEIR VIEWS ON THE 1951-1952 HUNTING REGULATIONS. THE COMMISSION WILL HOLD A MEETING OF FIELD PERSONNEL TO GET RECOMMENDATIONS FOR THE NEW REGULATIONS. LATER THE COMMISSION WILL MEET TO SET UP TENTATIVE REGULATIONS. THESE TENTATIVE RULES WILL BE SUBMITTED TO INTERESTED SPORTSMEN AT THE PUBLIC HEARINGS. AT THE END OF THE SERIES OF HEARINGS THE COMMISSION WILL SET THE OFFICIAL REGULATIONS AFTER CONSIDERING THE SUGGESTIONS BROUGHT FORTH AT THE HEARINGS.

FOLLOWING ARE PLACES AND DATES FOR THE PUBLIC HEARINGS. THE HEARINGS WILL BE HELD IN THE COURTHOUSE OF THE TOWN CONCERNED, EXCEPT THAT IN ROCKY MOUNT THE HEARING WILL BE IN THE CITY COURT ROOM, AND IN HICKORY THE HEARING WILL BE AT THE COMMUNITY CENTER. THE ROCKY MOUNT MEETING WILL BE HELD AT 1:30 P.M. ALL OTHER MEETINGS ARE SCHEDULED FOR 10 A.M.

DISTRICT 9, MAY 29, SYLVA; DISTRICT 8, MAY 30, HICKORY; DISTRICT 7, MAY 31, DOBSON; DISTRICT 6, JUNE 1, ALBEMARLE; DISTRICT 5, JUNE 4, GRAHAM; DISTRICT 4, JUNE 5, ELIZABETHTOWN; DISTRICT 3, JUNE 6, ROCKY MOUNT; DISTRICT 2, JUNE 7, NEW BERN; DISTRICT 1, JUNE 8, EDENTON.

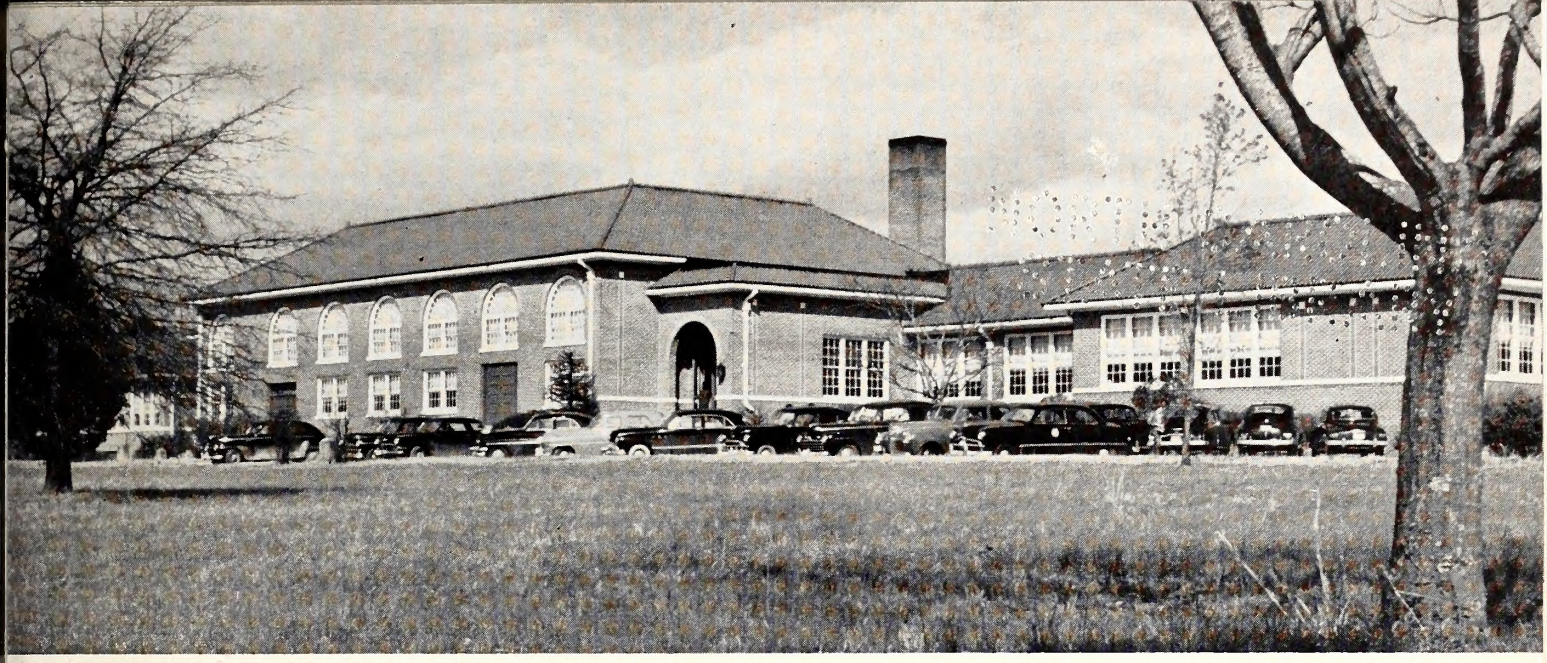
MEN WHO DESIRE TO TAKE TRAINING IN PROSPECT OF EMPLOYMENT AS WILDLIFE PROTECTORS BY THE WILDLIFE RESOURCES COMMISSION WILL HAVE AN OPPORTUNITY TO DO SO AT THE ANNUAL WILDLIFE PROTECTION SCHOOL THIS SUMMER. AT ITS APRIL MEETING THE WILDLIFE RESOURCES COMMISSION APPROVED A PLAN WHEREBY PROSPECTIVE WILDLIFE PROTECTORS WILL BE GIVEN TRAINING AT THE SAME TIME INCUMBENT WILDLIFE PROTECTORS TAKE THEIR ANNUAL REFRESHER TRAINING COURSE. THE SCHOOL WILL BE CONDUCTED WITH THE FACILITIES AND COOPERATION OF THE INSTITUTE OF GOVERNMENT AT NORTH CAROLINA UNIVERSITY IN CHAPEL HILL.

APPLICATIONS FROM PERSONS DESIRING TO TAKE THE TRAINING COURSE WILL BE ACCEPTED UNTIL JUNE 5. ACCEPTABLE APPLICANTS WILL BE GIVEN BOARD AND ROOM DURING THE TRAINING PERIOD, PLUS MONETARY COMPENSATION. TRAINEES WHO COMPLETE THE TRAINING COURSE SUCCESSFULLY WILL FILL VACANCIES IN THE WILDLIFE PROTECTION STAFF AS SUCH VACANCIES OCCUR.

APPLICATIONS TO ATTEND THE SCHOOL MAY BE MADE ON REGULAR APPLICATION FORMS FOR STATE EMPLOYMENT. SUCH APPLICATIONS ARE AVAILABLE FROM LOCAL STATE EMPLOYMENT OFFICES. PERSONS INTERESTED IN TAKING THE TRAINING COURSE MAY OBTAIN FULL PARTICULARS BY WRITING DIRECTLY TO THE WILDLIFE RESOURCES COMMISSION, WILDLIFE PROTECTION DIVISION, RALEIGH.

IN A MOVE TO SIMPLIFY TERMINOLOGY THE WILDLIFE RESOURCES COMMISSION HAS APPROVED A PLAN TO CHANGE THE NAME OF ITS ENFORCEMENT DIVISION FROM "LAW ENFORCEMENT" TO "WILDLIFE PROTECTION DIVISION." THE NEW DESIGNATION IS NOW IN EFFECT.

TAR HEEL HUNTERS WILL GET SOME FREE ADVICE ON SAFETY IN HANDLING FIREARMS WITH THE 1951-1952 EDITION OF THE HUNTING REGULATIONS. THE SPORTING ARMS AND AMMUNITION MANUFACTURERS INSTITUTE IS DONATING 290,000 COPIES OF A SMALL LEAFLET ENTITLED "TEN COMMANDMENTS OF SAFETY." THE LEAFLETS WILL BE SENT TO LICENSE DEALERS AND HANDED OUT WITH HUNTING LICENSES AND COPIES OF THE HUNTING REGULATIONS.



Ball's Creek school in Catawba county. Within these brick walls, and in other schools throughout North Carolina, future citizens and sportsmen are being molded. It is a sound practice to include conservation in their education.

CONSERVATION IN ACTION — CATAWBA COUNTY

By LUNETTE BARBER

Wildlife Education Representative

ON the western edge of the Piedmont lies high and rolling Catawba County, a very choice spot in North Carolina. Predominant industries are textile manufacturing, furniture manufacturing, dairying, cattle raising, and farming. Since the county's natural resources—soil, water, forests, and wildlife —are being used so very rapidly, it is evident that there is great need for conservation to be put into practice if progress is to continue.

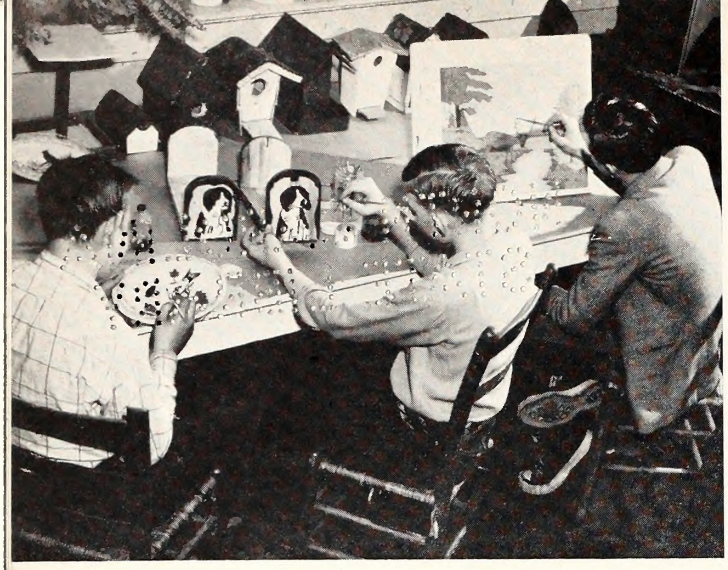
The study and practice of wildlife conservation has been put into action by some educators and sportsmen of the county. Miss Maud New Shepard, supervisor of Catawba county schools, has introduced, encouraged, and insisted that conservation be studied and practiced in each grade under her supervision. Being a far-sighted, progressive educator she says over and over again, "The study and practice of conservation should be in every school curriculum because *conservation* is the very keyword to future success in our nation." At Miss Shepard's request, a wildlife education representative from the Wildlife Resources Commission has visited each school in the county, lectured, suggested plans for projects, and furnished each teacher who desired it material for wildlife study. The local game protector has assisted in conservation work. Movies from the Commission have been secured by some of the teachers. Junior Wildlife clubs have been organized in many schools. They have not only studied conservation, but the study has been taken from the classroom to the out-of-doors and put into practice.

Not only has wildlife conservation had a beginning in the county schools, but the Hickory city schools have begun in the study too. With one of the most outstanding, progressive superintendents in the state, Mr. J. Loy Sox, conservation education has been encouraged in all his schools. It is most interesting to note that Mr. Sox has stressed that a study of North Carolina be made throughout the city schools.

The 4-H Club leaders in the county have not neglected their part in conservation education. Twenty-five club members are carrying wildlife projects, and 25,000 bicolor lespedeza plants have been secured from the Wildlife Resources Commission for 4-H Club members to plant this spring.

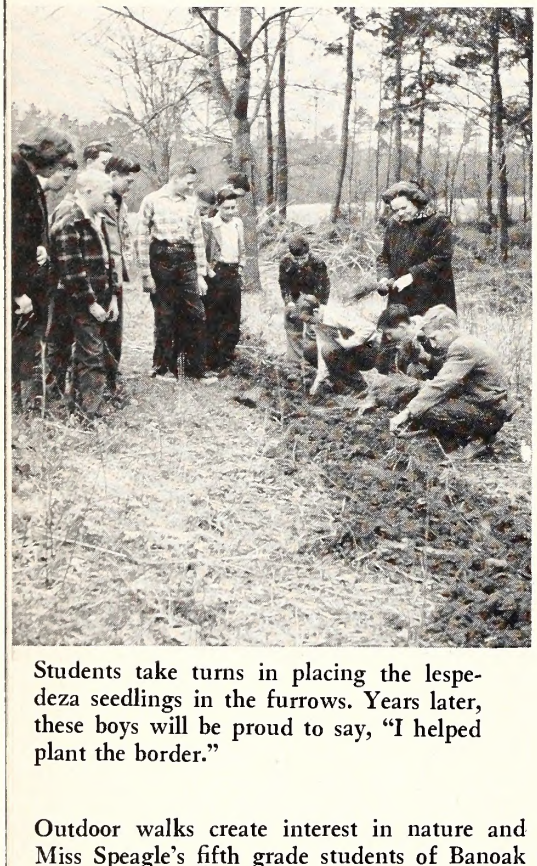
The educators have not promoted the full program alone—the Catawba County Wildlife Club, which is one of the most active in the state, is doing its share in youth education. Mr. Frederick Frick, chairman of the education committee, is doing an excellent job. With his assistance, endless efforts, much work, and the full support of the club, the recent state-wide Wildlife Essay Contest in the high schools of the county was successfully sponsored. Also the club has offered three prizes for the best border strips grown in the county this year. First prize will be $30 and a pair of bobwhite quail, second prize will be $20 and a pair of bobwhite quail, and third prize will be $10.

An enthusiastic program by school officials, teachers, 4-H Club leaders, and sportsmen has begun conservation education and practices in Catawba county—a program that *will* continue since there is much to be gained in the conservation of our natural resources.

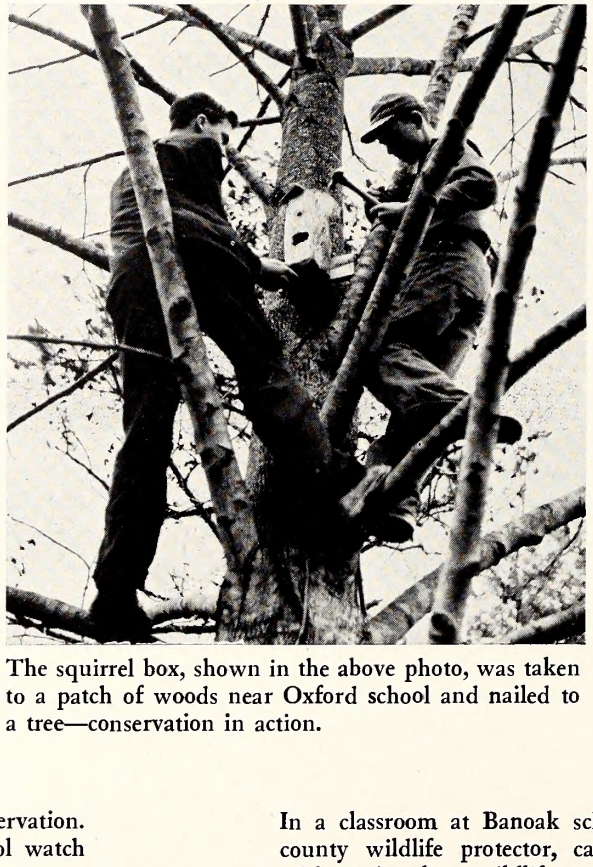


Children are keenly interested in wildlife crafts. Sixth grade students of Oxford school add finishing touches to a tray, bookends, and painting.

Mrs. Virginia Little of Oxford School inspects a squirrel box that has just been completed. Other students are carving, building a birdhouse, and weaving.



Students take turns in placing the lespedeza seedlings in the furrows. Years later, these boys will be proud to say, "I helped plant the border."



The squirrel box, shown in the above photo, was taken to a patch of woods near Oxford school and nailed to a tree—conservation in action.

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Wildlife education
Resources Commissic
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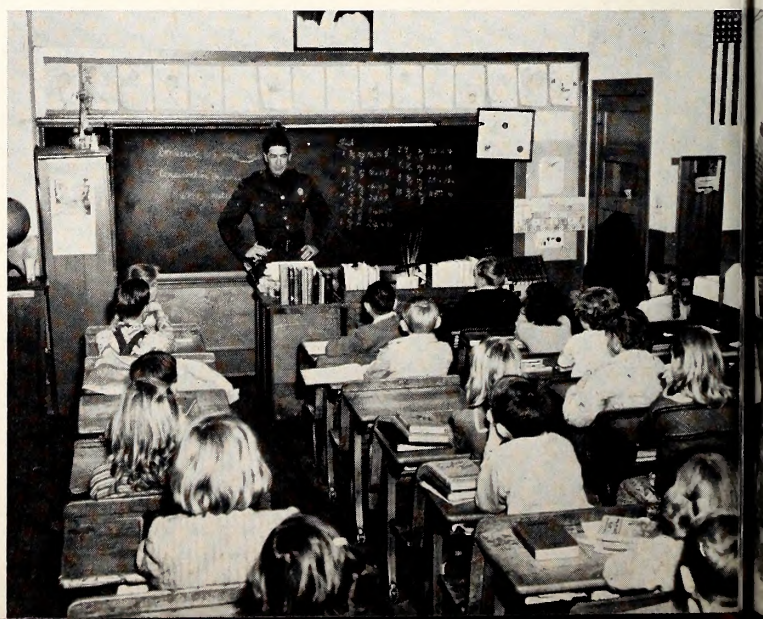
Outdoor walks create interest in nature and conservation. Miss Speagle's fifth grade students of Banoak school watch a soaring buzzard.

In a classroom at Banoak school, John Fairchild, Catawba county wildlife protector, captures the students' attention with stories about wildlife and its value.



Conservation work is not confined to the classroom at Oxford school. Several students examine bundles of lespedeza, while one reads the directions for planting it.

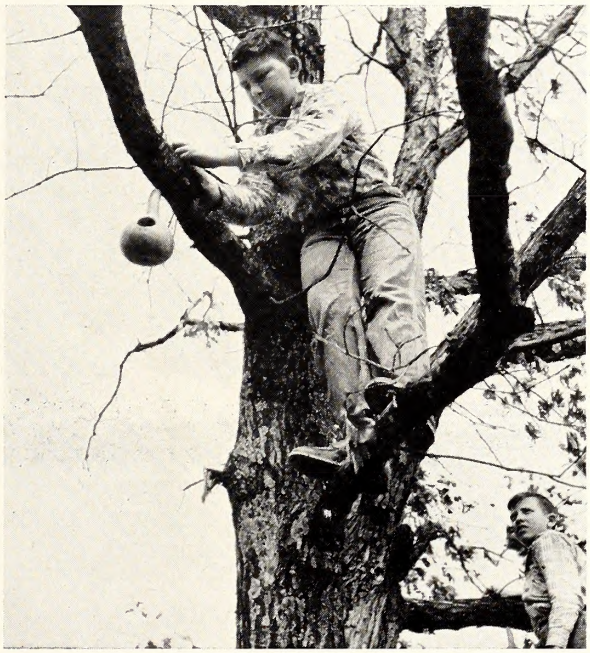
Almost within the shadow of the schoolhouse, land is broken to plant a bicolor field border. The school janitor cooperates by handling the mule and plow.

SCHOOLS PUT TO ACTION

ust a long word to the wn in these pictures. oing something con- our wildlife and other recting squirrel boxes olor lespedeza.

re in that they have ciples and values of They will grow up to portsmen as a result. atives of the Wildlife ontinuously with tea- als to provide more ublic schools.

Photos by Jack Dermid



Gourds make good bird houses, and a sixth grade student of Stantown school places one in an oak on the school's grounds. It will be a big event when birds move in.

It is more fun to study birds with binoculars and to photograph them than it is to kill them with an air rifle. This boy wants to swap his weapon.

Mrs. D. A. Anthony, center, assists her sixth and seventh grade students in planting a dogwood tree on Stantown school's grounds.

These students were Ball's Creek school's entries in the wildlife essay contest sponsored by the Wildlife Resources Commission and the North Carolina Wildlife Federation.

INFORMATION, PLEASE!

By Dwight G. Rivers

Wildlife Protection Supervisor, District 8

WHY is the squirrel season set in October instead of September? Why outlaw the Cooper's hawk and protect the broadwing hawk? Can a wildcat kill a full grown deer? And does the hoop snake really kill a tree when he inadvertently "stings" it? Why are the deer in my area getting smaller? Why are there so many more does than bucks? Does a deer really lose its antlers every year? What can we do to increase the deer herd? Can a dog really catch a deer? How many stillborn fawns are dropped because of dogs running female deer heavy with fawn? Has a buck lived through a breeding season when its antlers are only 2 inches long?

There are thousands of questions asked as to the whys and wherefors of habits and actions of game birds and animals, and additional thousands of questions asked as to why the seasons are set thus and so when they should be so and thus. An estimated 99% of the questions are asked of the men in the field; and, since he is readily available for questioning, the Wildlife Protector catches most of those queries. A very small percentage of the questions are mailed into Raleigh for the specialists to answer.

Photo by Jack Dermid

The wildlife protector is much more than a "woodland cop." Here a protector instructs a youngster on the use of binoculars.

These questions, pertaining to every subject from deer food to fish scales, put the Wildlife Protector on the spot, and require that his knowledge extend a good deal beyond the scope of pure law enforcement if he is to give the sportsman the full measure of service required from him. According to the questions asked him, he must be well versed on the laws of his county, his district, and the entire State; he must be able to identfy the various species of wildlife; he must know how to carry out the various game management practices advocated by our biologists (how, when, and where to plant bicolor lespedeza for small game, how to enumerate grouse population in a census program when called upon, how to take water temperatures in lakes or streams, and how to build farm ponds).

The Wildlife Protector devotes a lot of his time to help stock trout streams, and a thousand people ask him why he didn't stock the beautiful little stream down on John Doe's place. The answer may be anything from unfavorable water temperature, to lack of proper protection, to stream fluctuation, to the fact that the stream was posted and the Wildlife Resources Commission will not stock waters unless they are open to public fishing. The protector must know the answer—he is the man in the field representing the Commission.

Have you ever been sitting on the river bank with a cork bobbing out in front of you and heard somebody ask, "How's luck today, Mister?" There was your Wildlife Protector and after he checked your license and looked over your string of fish and you finally figured he was a pretty good guy after all, a question that you had argued with friends around the store popped into your head—"Say, I'll bet you can settle an argument for me; why don't the holes in squirrel dens grow over and close up the hole?"

Your Wildlife Protector today has duties which are a far cry from those of the old "coon constable" and "rabbit sheriff" days. He must be a competent naturalist, and he realizes that it is better to say, "I don't know," than to give the wrong answer. Inquiring sportsmen remember that when they get an "I don't know" answer the protector is not an ignoramus. After all, nobody knows all there is to

be known about game or anything else. It takes a smart man to say "I don't know," but, if possible, the Protector will find out, to have the answer ready next time.

Your present day Wildlife Protector must not only know the answers—he must be able to give them in public meetings. He is often called on to address wildlife clubs, civic clubs, and other interested groups. Part of his job is in insuring for the future; hence, he must devote much of his energy to organize the youth of his district into clubs which represent the good clean life of sportsmanship and citizenship, and the love of the out-of-doors. He must organize his facts and materials as he never did before in working with these youngsters, since their natural interest has established inquiring minds which run far ahead of the unprepared instructor. Certainly no "possum police" protected game by such educational activities, but today's protector sees in it protection with a capital "P." Often, the protector is asked to perform duties entirely apart from enforcement: "Will you show the biologist coming into your county the best (or worst) deer range or rabbit range? Is the quail or raccoon population greater or less than it was last year? Please help in the dove census or duck census, by taking the following course of action! . . ." These are but a few of many requested of the protector from the administrative offices. "The posters you will receive should be posted within two weeks after receipt," "The requested films are being sent in your care to be shown to ..... Wildlife Club and at the County School," and, "Thanking you for 150 subscriptions to *Wildlife in North Carolina;* these are typical of letters from the Education Division. "We are issuing water temperature thermometers to protectors having trout streams in their counties. . .;" "Please recommend desirable waters for study as trout producing streams. . .;" "The waters where seining, as coarse fish removal practice, shall be permitted, shall be designated by the protector after investigation and study." Yes, the Fish Division relies on the protector's service, also.

Although the Wildlife Protector's chief job is law enforcement, the foregoing will show that law enforcement is not merely a matter of trying to catch someone committing a violation. It is not necessary to make sportsmen out of Americans; as a recent article in *Wildlife* pointed out, they "would rather be horse whipped than called poor sports." It is only necessary to acquaint them with the rules and the reasons for the rules, and the protector is usually the one called upon to furnish this information.

To these ends, and to add to the Wildlife Protector's effectiveness in all the various jobs that are handed to him, or that are inherent in the job itself, the Wildlife Resources Commission has utilized the facilities of the Institute of Government at the University of North Carolina in conducting yearly training schools. The laws and their application are studied, and such subjects as first aid, life saving, identifying waterfowl, trapping, predator control, land management for wildlife, public speaking, fingerprinting, modern criminal detection methods, the habits of birds, fish and animals and their application to management, forest fire control, and many others are being taught; and plans call for expansion of present subjects and addition of new ones as needed.

Sportsmen are mighty proud of the Wildlife Protectors here in North Carolina. There is far more to be learned than there is time to assimilate it, and of course many mistakes are bound to be made, often without the realization that the effort is incorrectly applied. Some other states may have more law enforcement men per square mile, but taken all in all and man for man it is hard to beat North Carolina's Wildlife Protector as an efficient and willing representative of the wildlife conservation cause.

P.S. If your protector doesn't know the answers to some of the questions as posed in this article, give him a chance to find out for you.

P.P.S. We didn't say anything about those 80 and 90 hour work weeks protectors sometimes average—but nobody has an answer for that as long as there are questions for the protector to answer.

WILDLIFE MANAGEMENT DAY PROGRAM

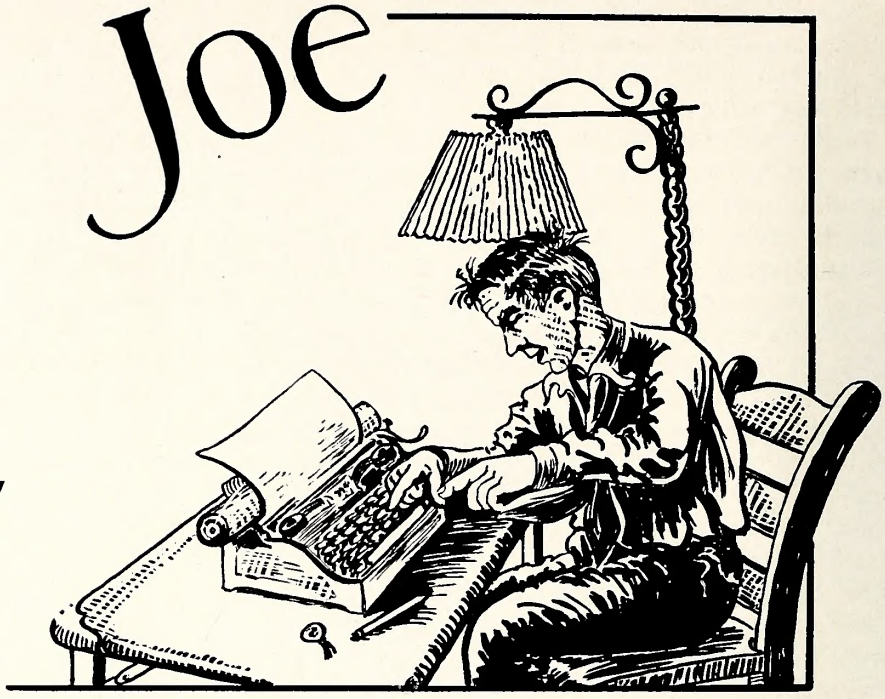
ABOUT 250 Boy Scouts from Districts 4 and 5 received a new slant on wildlife and the conservation program on March 21, 1951, when Supervisors Rollins and Caine and eleven of their game protectors took the group on a field trip to the Wildlife Commission's fish hatchery at Fayetteville.

The occasion was the first Wildlife Management Day to be observed by the staff of the Wildlife Resources Commission, and the date came within the National Wildlife Conservation Week. Much credit is due to the twelve citizens and resource agency representatives who took their personal time and means to provide transportation and to give conservation talks to the boys on the grounds.

The enthusiastic youngsters absorbed the information through eyes and ears, and the box lunches and refreshments were bad losers to a bunch of healthy appetites. The oldsters had their necks out a mile when they challenged the kids to a softball game—you guessed it—the score was 20 to 12 in favor of the scouts.

It has often been stated that our game protectors needs more friends, and it seems that making them in this way is a creditable effort.

Dear Joe



Wildlife Resources Commission
Raleigh, N. C.
Gentlemen:

WHY DO WE HAVE SO FEW ROCK FISH AND WHAT ARE YOU DOING TO INCREASE THEIR NUMBERS?

Yours truly,

Joe Doaks

Dear Joe,

That's a double-barrelled question, boy, and each part of it would take a fair-sized book to give you the whole answer. We'll try to boil the story down to letter size and just hit the high spots, and if you want more details you will have to write and ask specific questions.

The striped bass, or rock fish as you call him, is anadromous. That's just a ten-cent word which means that he spends his life in salt or brackish water and goes up fresh-water rivers to spawn. In this respect he is like the salmon and the shad and herring. Females will average from one hundred thousand to seven hundred thousand eggs, depending on age and size. A four-pound fish will lay about a quarter of a million eggs. These eggs are very small when they are first laid, but in a short time the outside membrane swells to three times its former diameter and the space between the egg contents and the outside membrane constitutes a built-in shock absorber. At that stage, the egg is almost exactly the same density as water, and it bounces along down the river with the current, well protected against injury. Some two days later this egg hatches out and the little striped bass is on its own in a rough, tough, and cruel world. During the first three years of its life the rock grows nearly six inches a year, and somewhat more slowly after that.

Now here is the important part of it, Joe. The male fish become sexually mature at two years of age, when they are a little less than a foot long. At this age none of the females are mature. Some twenty to twenty-five percent of the females will be ready to spawn when they are three years of age and about seventeen inches long. Nearly all the females will spawn at the end of their fourth year. At our most important spawning ground in the Roanoke River at Weldon, the females usually are from four to fifty pounds, and when they are spawning, each one will be surrounded by ten to fifty or more little two-year-old males. A collection of one hundred twenty-seven individuals there in 1938 showed just six of them to be females.

There is the answer to the first part of your question, Joe. We have so few rock fish because most of the females do not survive the nets and hooks for the necessary three or four years for them to mature and reproduce their kind.

There is one good thing about it, though, North Carolina fishermen can have more rock, and bigger rock, any time they want them. Chesapeake Bay is probably the most important spawning ground for striped bass along the whole Atlantic coast, but Virginia and Maryland can do very little about the number of fish that return to spawn each year. The

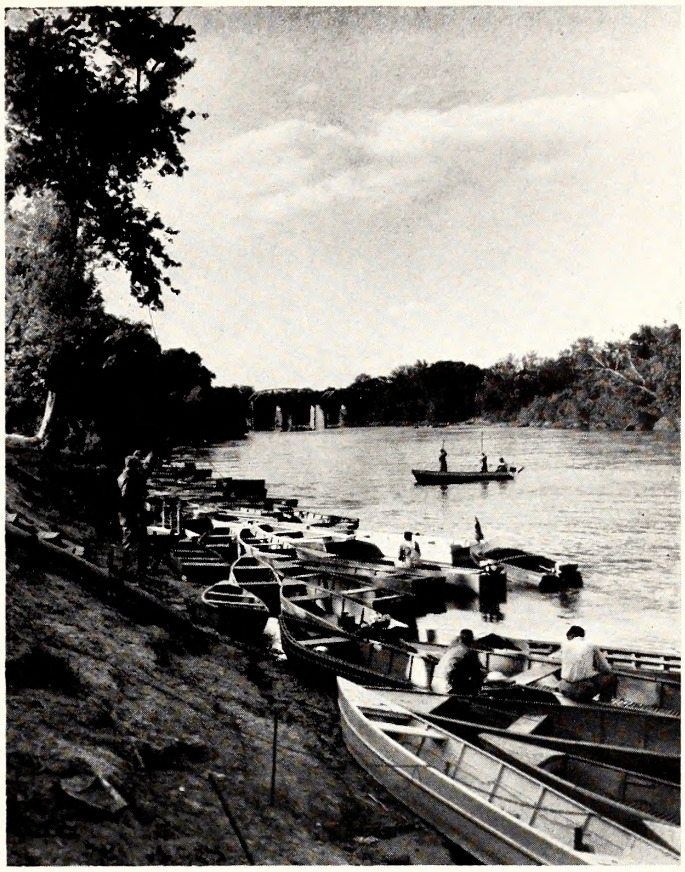
Fishermen bring roe fish to the Weldon hatchery so that they can be stripped of eggs, which would otherwise be lost.

rock from there move out into the ocean in the spring and up the coast to New England, returning in the fall with their numbers decimated by the efforts of fishermen all along the coast. The rock fish population of North Carolina, however, stays home. The fish move down the rivers into Albemarle Sound and Pamlico Sound and out into the ocean, but in only rare instances do a few of these fish move up the coast as far as Virginia or south as far as South Carolina.

Just think what would happen if all the fishermen of North Carolina decided not to kill a rock less than seventeen inches long! Not only would the little fellows have a chance to grow up to three or four pounds at least, but one-fourth of all the females would have a chance to spawn at least once. Think of the millions more rock fish we would have. For both the net fishermen and the hook-and-line fishermen there would be more fish, more pounds of fish, and bigger fish for everybody. They can have it any time they want it! What are YOU going to do about it, Joe?

Now for the second part of your question. One constructive thing is being done to save the eggs of the fish that are caught on their spawning run up the Roanoke. The town of Weldon, the United States Fish and Wildlife Service, the N. C. Department of Conservation and Development, and the N. C. Wildlife Resources Commission all cooperate in operating a hatchery on the bank of the Roanoke River at Weldon. When a fisherman catches a roe fish, he brings her to the hatchery and the eggs are removed, fertilized, and placed in hatching jars to develop. Water is introduced to the bottom of the jar through tubes. It flows up through the eggs and out the top, thus creating a situation similar to river conditions in which the eggs would naturally be. The development of the eggs depends on water temperature. At sixty degrees the fry will hatch out in about seventy-two hours, but at seventy degrees they will develop in half of that time.

Fertilized eggs are placed in hatching jars to develop. The fry are released into the river soon after hatching.



Many boats are on the Roanoke river near Weldon during the spawning run of rock fish.

It is most interesting to observe that the Roanoke River at Weldon is some seventy-five miles from Albemarle Sound and that it flows on an average of four miles an hour. That means that the water passing Weldon is in the sound some twenty hours later. Since the eggs require a minimum of thirty hours to hatch, it is apparent that they are in the sound, or very near it, at the time of hatching. The fry are so delicate that they probably could not stand this trip down the river through turbulent water, rocks, and pollution; but the eggs, with the built-in shock absorber, get through very nicely before it is time for them to hatch out.

In the hatchery, as soon as the fry begin to swim, they move up with the water and out of the hatching jars into the trough where they are collected. At this stage they are nearly transparent, about a quarter-inch long, and have the egg sac attached. It has been found that if they are held in the hatchery more than a day after they hatch out, a great number of them die, so the fry are taken to the rivers and put back in their native habitat very promptly. In the fry stage they are quite delicate, and a rough automobile ride can be fatal. It takes a good driver to get them in the water alive. No matter how carefully they are transported, though, they will not live if the travel time is more than about two hours. This limits their distribution, but it is possible to plant the fry in most of the rivers of North Carolina

where they were formerly abundant.

This program seems to be doing some good, too. The boys report that they are beginning to catch rock in good numbers in waters from which they have been absent for many years. This is good news because it shows that the efforts are not wasted. In the last fourteen years, the Weldon Hatchery has taken over fifty-five million eggs, and from them has successfully stocked more than thirty-six million fry. Of course, a great number of those fish do not live to grow up and be caught, but the fact that they are coming back shows that the program is doing some good. And that, Joe, is the answer to the second part of your question. It is worth pointing out again, though, that this whole hatchery effort would not amount to a drop in the backet compared to the increased population which would result from guaranteeing that one-fourth of the females be permitted to spawn naturally. The hatchery helps—but the really important improvement which can be made in the striped bass fishery can only result from the cooperative effort of all the fishermen concerned.

Incidentally, Joe, the Weldon Hatchery is only in operation during the spawning run, which is usually from about the middle of April to the middle of May. The hatching of the eggs is an interesting thing to see. Why don't you pack up Mary and the kids and go look it over? They will enjoy it—and you really should take your fishing rod.

Best wishes,

Harry Cornell

P.S. A sweet young thing asked me the other day if the proper name for a young rock was a "pebble".

JHC

BACK-YARD CONSERVATION

A ROAMIN' IN THE GLOAMIN'

By BILL HAMNETT

Wildlife Education Representative

"Man you're crazy. Why old Spot wouldn't harm a flea. He never leaves the house. Here all the time".

"Pete is a good dog he hunts a little, but does no harm. I see him coming across the field every now and then".

"That cat's too lazy to go far, just lays in the sun all day".

This is what is heard from one end of North Carolina to the other when the question is asked: Do you keep your dogs and cats confined during the breeding season of game species?

We seldom pause long enough to realize the tremendous chance we take as sportsmen when these dogs and cats (OUR PETS) are permitted to roam free during the spring and summer months both in town and out in the country. How amazed the doubters would be if they would but only take time to study the wanderings and effects of Rover and Tabby. You don't believe it? See for yourself.

But perhaps you are less enthusiastic in your attitude and would like to try to stop this wandering horde regardless of the means and manner required. What can be done? What can you do?

1. Keep your dogs and cats well fed at home and there will be a minimum desire to roam in search of supplemental food. There will be less chance of that rabbit nest being destroyed; that quail nest being broken up.

2. Should you be careless about regularly feeding your pets then keep the dogs tied up or in kennel pens. Use a traveling wire for yard dogs. That is nothing more than a heavy wire, stretched between two posts or trees 50 to 100 feet apart, to which is attached the loop on one end of the dog chain or rope while the other end is fastened to the dog collar. This gives the dog freedom to move or run back and forth but yet keeping him within bounds. Dog kennels and pens should be clean and comfortable, water should be available and feeding regular. There must be some provision for shade during the hot months. The cats should be tethered or restricted by a leash, or a tinkling bell tied about their necks. Get a little ringing bell at your local store and a leather strap for a collar, that will keep the cat making a sounding noise that will warn small birds and game animals of impending danger.

3. Keep your pets as friends and develop in them a desire to stay at home near you. Play with them; give them proper attention and care and they will be less likely to roam away.

By now you perhaps feel that this is something that does not apply to you. If not, than pass your ideas on to your neighbor. But wait, check yourself as to the advisability of doing something. The next time you drive along the highways at night, returning home or traveling to a friends, count the number of stray dogs and cats you pick up in the headlights of your car. Then quickly figure how many that would be if it was just like that all over the state. There is approximately 63,000 miles of public roads. Then next fall as you go bird hunting or rabbit hunting and it begins to appear that this is going to be a poor season—nothing is in the field to shoot —remember the many stray dogs and cats who got there first, months before you. It is only the inclusion of one letter that changes "PETS" to "PESTS".

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

CONDUCTED BY WIN DONAT

All game administrators and many sportsmen appreciate the worth of the game laws under which the sports of hunting and fishing are protected and administrated. Certainly an enforcement officer can be efficient in his work only to the extent that he has a good set of laws to enforce. To a great extent, the courts can be hindered or helped by the character of the laws they are given to uphold.

Another General Assembly has folded its tents and gone its separate ways back to private life, leaving behind it a record on the law books of the state. On the whole, the record is good. Your Commission has asked for some laws, you, through your representatives, have asked for others. Also there have been some flies dropped in the ointment. The slow grinding mills took as grist all that came and did a remarkably able job of sorting the good from the bad. Nothing seriously bad was passed and many good bills are now law. As they affect your hunting and fishing, it is significant that your Federation and the Commission had the support of many of the members of the General Assembly in their efforts during the 1951 session.

The big point is, if we are able to give you a better program in the years to come, it will be because of not only the continued support, but the increasing support you folks give the program.

Those of you who, in groups and as individuals, kept your legislators informed as to your wishes in the matter of bills pending not only performed a civic duty but discharged a responsibility. You played the part of genuine members of a genuine democracy. Compare this privilege with that of Comrade Ivan. Let us strive toward increased recognition of our duties, not only to our hunting and fishing, but to our homes, communities, and country, that we may continue to be the grandest people in the best country on the face of the earth!—W.D.

Here is a real "What Do You Think" letter from Mr. C. A. Brickhouse of Wilmington, N. C., and I hope that you will put your thinking on a card or letter and address it to me.

"I have been hunting in North Carolina since I was old enough to be trusted with a gun, which was when I was twelve years old; I have bought hunting licenses, duck stamps, etc., since I was 16 and since duck stamps were required, and feel I have observed the game laws and been as near a law-abiding sportsman as possible.

"However, I am now about disgusted with hunting under the present set-up, what with pulp and paper mills buying up all woods land, posting them, or leasing them to groups of men who are more financially able to do this than the average sportsman. In all areas around Wilmington there are large hunting clubs, composed of members of doctors, lawyers and successful business men, and this is taking away the liberties of the general public in hunting and fishing, while they do not always observe the game laws which are supported—not by them alone—but by the mass of sportsmen. These clubs reap the benefits of wildlife conservation and development, which would not be had if it weren't for the people buying licenses that are unable to belong to some club.

"Also, I do not feel that it is quite right for large monied interests to come into our state and buy up all the land they can grasp, and then close them to the public. I realize that if they buy the land it is theirs, and that they close it largely because of fire hazards, but I believe that something should be done to protect the sportsmen of our state in this direction.

"Personally, I have been offered an opportunity to become a member of one of these clubs, and I could afford to do so should I choose, but it kind of turns my stomach when 'Sportsmanship' comes down to the level of only a few being given the privilege of enjoying what the public is paying for—and stooping to buy what I feel is the natural right of every citizen of the state after he has bought his hunting license.

"If possible I would appreciate your airing this letter in your magazine for comments by sub-

scribers, and, if possible, I would also appreciate a few lines from you on this subject. I am enclosing my check for a one year's subscription to WILDLIFE IN NORTH CAROLINA. I think it is a fine magazine."

The following letter from Mrs. Lucile Draper Gault, President of the Chapel Hill Bird Club, is self-explanatory and is published for the purpose of informing those of you who may be interested in this worthy cause:

"Members of the Chapel Hill Bird Club are deeply concerned over the predicament of Mr. Gaddy who has so admirably fed and protected wild geese at his pond for a period of years. Some of your readers may not know that he is required to pay back taxes on admission fees, and this expenditure cuts down the funds available to him for feeding the geese this year.

"Our club sent Mr. Gaddy Ten dollars and has appealed to the Wildlife Resources Commission for aid in his behalf. I quote from Mr. Patton's reply:

"'We also believe that Mr. Gaddy is doing some very fine work for migratory wildfowl in North Carolina and we would like to be in a position to give him some financial assistance. The way our budget is established at the present time, however, there will be no money available for buying feed for these geese during the next few months.'

"The Chapel Hill Bird Club believes that there are other clubs and also individuals who would like to send contributions to Mr. Gaddy to see him through these months. Let's all send what we can to Mr. Lockhart Gaddy, Ansonville, North Carolina."

No one can doubt the sincerity of Mr. E. B. Loflin of New London, N. C., and many others like him who have a real concern for our wildlife. I regret that the pictures mentioned were not of reproducible quality. The letter follows:

"Enclosed is a photo of my little daughter holding two little kitten opossums that were made homeless and motherless by dogs running loose in closed hunting season (or summer). The other photo is after they were released. The mother was killed when the dogs pawed her out of the den, also killing two little kittens. There were four in all.

"I saw in the WILDLIFE magazine where dog owners were urged to keep up their dogs in the spring and summer. I think that is the thing to do and I'm urging my friends and neighbors to do the same. You have my permission to use these pictures in the magazine if you want to."

• CONTINUED FROM PAGE 7 •

If you are a bit squeamish, it might be well to let the meat cool in the refrigerator a few hours before frying it. You, and the frog, will be less "jumpy" at mealtime.

Besides their value as controllers of insects and as food, frogs have been used for generations in the study of physiology. Anatomically, they are surprisingly similar to the human organism, and millions of frogs have been dissected in the school laboratory to teach physiology and anatomy.

Whether you eat frogs, submit them to the scalpel, or depend on them to keep your garden free of insects, they and their rough-skinned cousins are an important part of our life. Our springtime lowlands and meadow ponds would be lonesome places indeed without them.

• CONTINUED FROM PAGE 9 •

rye-peas, winter peas, and rye grass-clover were planted. Some of these plantings were not successful and had to be replanted in 1950. In 1950 the following plantings were made in fields of one-half to ten acres, being mostly fields about one to three acres in size: Five acres of rye grass, seventeen acres of orchard grass-ladino clover, five acres of fescue-ladino clover. On six of the larger fields up the river, one-half acre border plots were left and will be planted in chufas this spring, primarily for the turkeys.

These plots were fertilized at the rate of 600 pounds fertilizer, 600 pounds phosphate, and 1½ tons lime per acre. They are put in as permanent pasture and will be top dressed with fertilizer each year, but will not be replanted until necessary. The plantings have been very successful. and use by deer, turkey, and grouse has been heavy.

Another phase of the management work is the pruning and release cutting of desirable wildlife food trees, particularly apple trees. Large numbers of apple trees are present at old home sites and logging camps. These are pruned and brush is cut away from them, producing some excellent apple crops. One hundred apple trees were treated on the area in 1950.

Many small openings resulting from old homesites, log landings, etc. are recleared and maintained. This cutting of brush and letting the sunlight in, brings about a change in plant succession and creates browse and additional forest edge. On Standing Indian, twenty of these small openings are being maintained.

Twenty-five blocks (55 lbs. each) of plain salt are placed on salt stands each year to provide for the natural need of the deer and to act as a holding factor.

Wildcats, foxes, and skunks are trapped each year for about forty-five days.

Most of the boundary line has been repainted and posted with metal signs.

In summary, the Standing Indian area shows great promise of becoming one of our best big and small game areas. Very successful deer, grouse, and raccoon hunts have been held, and turkeys are present in sufficient numbers to be transplanted to form nuclei of new flocks on other of the Western Management Areas.

WILDLIFE PROTECTION DIVISION

Many requests are received by the Wildlife Resources Commission for the names and addresses of wildlife protectors. The complete list is published here for your convenience. Save it for future reference. Remember that the law enforcement staff will be more efficient with your cooperation.

G. A. Jones, Jr., Chief — 812 Colleton Rd., Raleigh — Tel. 3-0410

WILDLIFE PROTECTION SUPERVISORS

COUNTY	NAME	ADDRESS	TEL.
Chowan	Thomas, Leon K.	Edenton	137
Craven	Watson, R. A.	R-2, New Bern	2641-3
Jackson	Wade, Frank	117 Pigeon St., Waynesville	
Lee	Rollins, Tom L.	Box 907, Sanford	625-L
Montgomery	Capel, C. M.	Mt. Gilead	19
McDowell	Rivers, D. G.	R-4, Marion	805-M
Robeson	Caine, E. W.	Lumberton	716-J
Watauga	Edmisten, W. F.	Boone	336-W
Wilson	Woolard, C. N.	Box 562, Wilson	3592

WILDLIFE PATROL

Buncombe	Heath, Walter L.	Box 7555, Courthouse Station, Asheville	
Cumberland	Chadwick, Oscar	R-3, Fayetteville	3-6511
Guilford	Poole, Sam F.	Box 751, Hillsboro	4841
Hertford	Parham, Francis T.	General Delivery, Ahoskie	
Iredell	Wooten, Howard L.	923 7th St., Statesville	3913
Onslow	Kinsey, W. D.	Box 667, Jacksonville	
Wake	Watts, B. K.	977 St. Mary's St., Raleigh	2-1522

WILDLIFE PROTECTORS

Alamance	Perry, Vance M.	Graham	6-2749
Alexander	Reese, Frank B.	Taylorsville	2431
Alleghany	Bryan, Dewitt T.	Glade Valley	Sparta-72F4
Anson	Griffin, Ralph R.	318 N. Washington St., Wadesboro	
Ashe	Koontz, Roland H.	Jefferson	W. Jef.-64-M
Avery	Carpenter, W. M.	Three Mile	5
Beaufort	Spain, C. B., Jr.	234 E. 2nd St., Washington	
	Overton, Chas. J., Jr.	Aurora	
Bertie	Smallwood, W. L.	Windsor	2086
Bladen	Culbreth, Sam	Elizabethtown	3081
	Woodell, E. W.	Dublin	2105
Brunswick	Duvall, Pawnee	Ash	8109
	Bowmer, H. T.	Southport	3516
Buncombe	Curtis, Donald E.	Box 43, Skyland	
Burke	Rhyne, Robin H.	R-2, Box 56A, Morganton	3106
Cabarrus	Patterson, John W.	R-8, Concord	8659

Wildlife Protectors - Continued

COUNTY	NAME	ADDRESS	TEL.
Caldwell	McLean, Clyde	Collettsville	2
Camden	McPherson, H. G.	Camden	
Carteret	Davis, Alex S.	Marshallberg	362
Caswell	Allen, Raymond Y.	Leasburg	4573
Catawba	Fairchild, John T.	Conover	587W
Chatham	Jones, A. Eugene	Siler City	285
Cherokee	Dalrymple, Arnold	Murphy	241J
Chowan	Evans, R. E.	Edenton	202
Clay	Martin, Harrison J.	Hayesville	
Cleveland	Woody, W. Earl	Grover	1392-XJ
Columbus	Boswell, B. L.	Bolton	
	Coleman, James N.	Bolton	
Craven	Warrington, L. E.	New Bern	3878
	Williams, Henry B.	Vanceboro	446
Cumberland	Faircloth, T. L.	1312 Ramsey St., Fayetteville	7242
Currituck	Dowdy, R. A.	Grandy	723
Dare	Ballance, Jack B.	Box 62, Kill Devil Hills	Nags Hd.-414
	Bratten, J. H. (Capt.)	Manns Harbor	
Davidson	Greene, J. B.	114 Taylor St., Thomasville	22415
Davie	Woodruff, Tom B.	Mocksville	23F21
Duplin	Ipock, Bill H.	Wallace	2406
Durham	Ward, Marvin L.	R-1, Morrisville	4-3462
Edgecombe	Hilliard, Henry, Jr.	R-2, Tarboro	4532
Forsyth	Jones, W. W.	2830 Patterson Ave., W-Salem	5921
Franklin	Wilson, P. B.	Bunn	4181
Gaston	McLean, J. D.	Box 66, Bessemer City	
Gates	Barnes, D. E.	Corapeake	Edenton-202
Graham	Garland, C. L.	Robbinsville	13-J
Granville	Brummitt, Thomas D.	500 Raleigh St., Oxford	992
Greene	Hill, Melvin E.	R-2, Snow Hill	
Guilford	Davis, John K.	Oak Ridge	
Halifax	Pettitt, C. M.	Box 261, Roanoke Rapids	Weldon-6897
Harnett	Turlington, T. J.	R-4, Dunn	39407
Haywood	Jackson, Edwin L.	R-2, Clyde	
Henderson	Jackson, Clyde L.	R-1, Flat Rock	
Hertford	Vinson, James H.	Winton	196
Hoke	McLean, H. R.	Raeford	5145
Hyde	Cahoon, Gilbert L.	Swan Quarter	
Iredell	Robertson, H. A.	17 Vet Court, Statesville	1289-R
Jackson	Cope, W. B.	Sylva	224W
Johnston	King, Harold J.	Smithfield	19W
Jones	Parker, C. R.	Pollocksville	37-5
Lee	Campbell, J. W., Jr.	R-7, Sanford	2-2961
Lenoir	Bell, D. B.	Kinston	2017
Lincoln	Allran, Cecil E.	c/o Nu-Way Cleaners, Lincolnton	
McDowell	Gowan, T. W.	Marion	905X
Macon	Penland, Claud	Box 253, Franklin	174
Madison	Ramsey, Raymond	R. F. D., Mars Hill	
Martin	Manning, Clywood A., Jr.	Robersonville	
Mecklenburg	Holler, William G.	210 W. 26th St., Charlotte	
Mitchell	Ellis, J. W.	Toecane	324
Montgomery	Poole, Cleat E.	Troy	145-M
Moore	McDonald, W. W.	Southern Pines	6784
Nash	Hester, Robert W.	Box 41, Nashville	
New Hanover	Hines, Hugh V.	Wrightsville Beach	2073

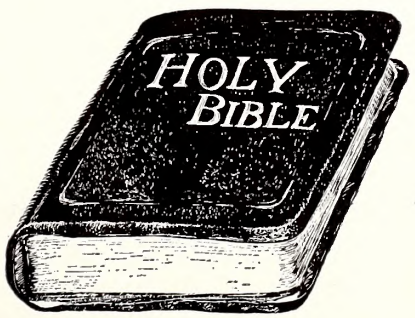
Wildlife Protectors - Continued

COUNTY	NAME	ADDRESS	TEL.
Northampton	Hughes, N. B.	Jackson	2106
Onslow	Humphrey, H. B.	Maysville	109
	Koonce, Lonnie	Richlands	576
Orange	Logan, R. F.	Chapel Hill	3676
Pamlico	Spain, Herman K.	Stonewall	88-3
	Hudson, George N.	Mesic	
Pasquotank	Pierce, Lester A.	Elizabeth City	08W5
Pender	Rivenbark, W. L.	Burgaw	8712
Perquimans	Winslow, G. Eldon	Hertford	3626
Person	Daniel, Maurice J.	Roxboro	4573
Pitt	Teel, J. O.	R-4, Box 71, Greenville	3651-1
Polk	Pack, Arthur	Tryon	495
Randolph	Davis, L. R.	Box 642, Asheboro	Police Dept.-422
Richmond	Bray, Walter	Rockingham	1043-J
Robeson	Hammer, Robert H.	Lumberton	493-J
	McConnaughey, W. E.	Red Springs	3721
Rockingham	Neal, A. D.	R-1, Stokesdale	Madison-5056
Rowan	(Temporarily Vacant)		
Rutherford	Peeler, William B.	R-1, Mooresboro	
Sampson	Naylor, Thomas E.	Roseboro	
	Bordeaux, Amos	Ingold	Garland-250
Scotland	Bostick, Roy	Laurel Hill	Laurinburg-2811
Stanly	Furr, Robert M.	315 S. 2nd St., Albemarle	
Stokes	Barr, George A.	King	5111
Surry	Beamer, George B.	R-1, Mt. Airy	
Swain	Crain, Wade	Bryson City, R-1	
Transylvania	Bagwell, Wade F.	120 Oaklawn Ave., Brevard	3865
Tyrrell	Mosley, E. L.	Columbia	2071
Union	Armfield, S. M.	Marshville	24-R
Vance	Crews, Norfleet G., III	R-3, Henderson	
Wake	Perry, B. D.	Wake Forest	5106
Warren	Pridgen, Alton D.	R-2, Macon	Warrenton-5258
Washington	Terry, J. T.	Plymouth	5441
Watauga	Osborne, Tom F.	Boone	279-R
Wayne	Howell, A. G.	R-5, Goldsboro	3039-J
Wilkes	Bentley, Joel	907 Henshaw St., N. Wilkesboro	316J
Wilson	Walls, Elmo L., Jr.	204 N. Pine St., Wilson	4703
Yadkin	Mackie, Frank W.	Yadkinville	3161
Yancey	Higgins, M. B.	Burnsville	

FIRST WRITTEN GAME LAW

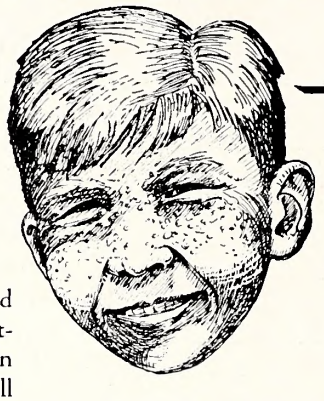
If a bird's nest chance to be before thee in the way, in any tree or on the ground, with young ones or eggs, and the dam sitting upon the young, or upon the eggs, thou shalt not take the dam with the young: thou shalt in any wise let the dam go, but the young thou mayest take unto thyself; that it may be well with thee, and thou mayest prolong thy days.

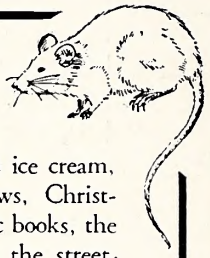
—Deuteronomy 22:6-7



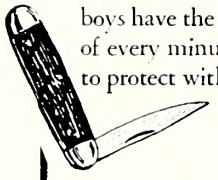
TARHEEL WILDLIFE SKETCHES

TAKE A BOY FISHING

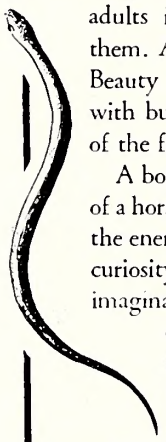




BETWEEN the innocence of babyhood and the dignity of manhood we find a delightful creature called a boy. Boys come in assorted sizes, weights and colors, but all boys have the same creed. To enjoy every second of every minute of every hour of every day and to protect with noise (their only weapon) when their last minute is finished and the adult males pack them off to bed at night.



Boys are found everywhere—on top of, underneath, inside of, climbing on, swinging from, running around, or jumping to. Mothers love them, little girls hate them, older sisters and brothers tolerate them, adults ignore them, and Heaven protects them. A boy is Truth with dirt on its face, Beauty with a cut on its finger, Wisdom with bubble gum in its hair, and the Hope of the future with a frog in its pocket.



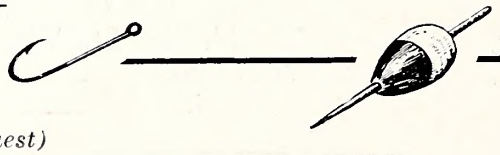
A boy is a composite—he has the appetite of a horse, the digestion of a sword swallower, the energy of a pocket-size atomic bomb, the curiosity of a cat, the lungs of a dictator, the imagination of a Paul Bunyan, the shyness of a violet, the audacity of a cracker, and when he makes something he has five thumbs on each hand.

Win Donat

He likes ice cream, knives, saws, Christmas, comic books, the boy across the street, woods, water (in its natural habitat), large animals, Dad, trains, Saturday mornings, and fire engines. He is not much for Sunday School, company, schools, books without pictures, music lessons, neckties, barbers, girls, overcoats, adults, or bedtime.

Nobody else is so early to rise, or so late to supper. Nobody else gets so much fun out of trees, dogs, and breezes. Nobody else can cram into one pocket a rusty knife, a half-eaten apple, 3 feet of string, an empty Bull Durham sack, 2 gum drops, and 6 cents.

A boy is a magical creature—you can lock him out of your workshop, but you can't lock him out of your heart. Might as well give up—he is your captor, your jailer, your boss, and your master—a freckle-faced, pint-sized, cat-chasing bundle of noise. But when you come home at night with only the shattered pieces of your hopes and dreams, he can mend them like new with the two magic words—"Hi Dad!"



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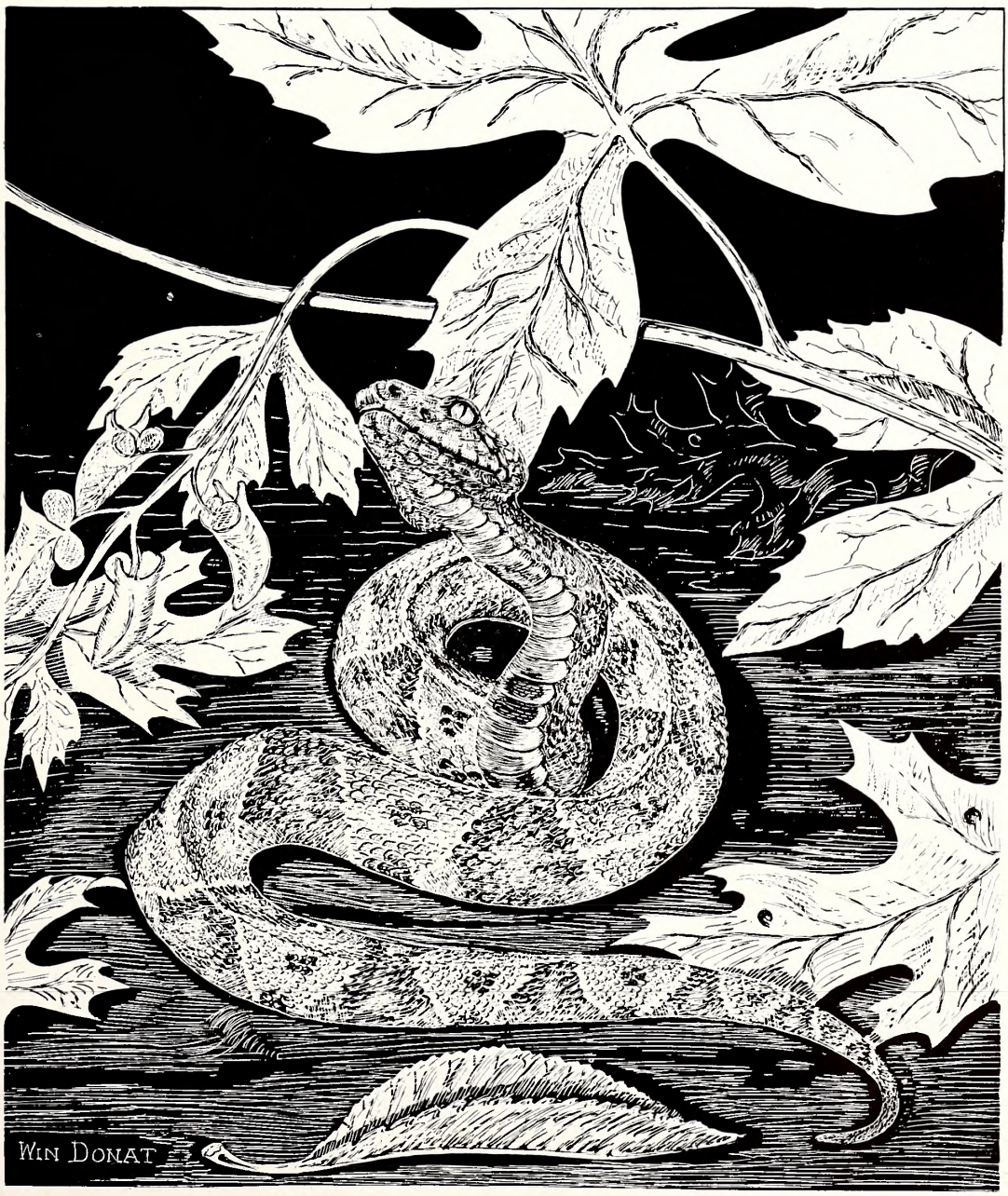


TEN CENTS JUNE · 1951

Photo by Jack Dermid

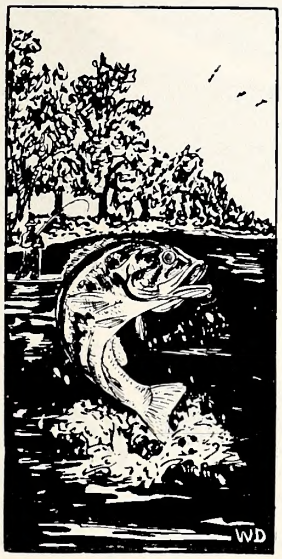
Brooding Mourning Dove

The head of a young dove protrudes from under each side of the adult. Mourning doves nest throughout the United States. A bulletin, *Mourning Dove Studies in North Carolina* by Thomas L. Quay, was published by the Wildlife Resources Commission in May.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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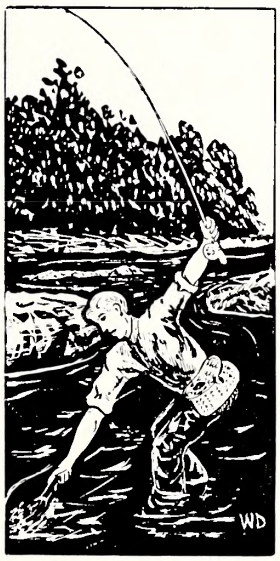

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ROD AMUNDSON ..... *Editor*
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WIN DONAT ..... *Art Editor*
MARTY MABRY ..... *Circulation*

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COVER

Using the scratch board technique, Win Donat posed a copperhead under the leaves of deadly nightshade, a poisonous plant.

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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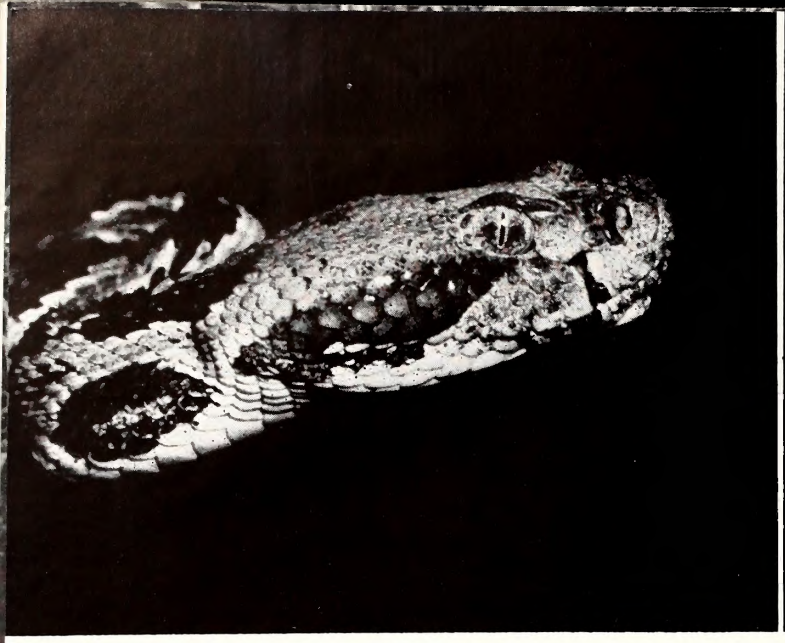
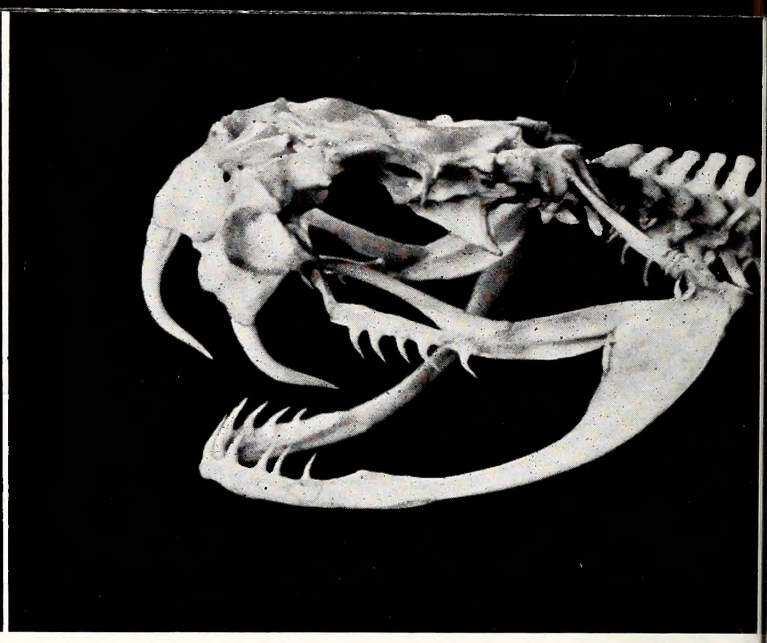


The profile of a timber rattlesnake. Note the cat-like eye, a characteristic of the pit vipers. Most snakes have round pupils.



The fangs of a rattlesnake are round, curved, and hollow. When the mouth is closed, they collapse into sheaths in the roof of the mouth.

LET'S LEARN *About Our Wildlife*

The Twenty-ninth of a Series on The Wildlife Species of North Carolina

Much of the material in this article was obtained from the N. C. State Museum bulletin, *Poisonous Snakes of the Eastern United States* by Harry T. Davis and C. S. Brimley. Copies of this bulletin are available from the State Museum, Raleigh, at 10c each.

Eastern POISONOUS SNAKES

By ROD AMUNDSON

Photos by Jack Dermid

SNAKES HAVE CAPTURED THE IMAGINATIONS and incurred the hatred of human beings since time immemorial. In the Book of Genesis, the serpent that tempted Eve to eat of the fruit from the Tree of Knowledge was cursed for all time. Throughout history snakes have appeared again and again in the literature and folklore of all the people of the earth with the possible exception of the Eskimos. Where the serpent of Eden has symbolized evil, the entwined serpents on the emblem of the medical profession symbolize mercy and healing.

Because a few snakes are venomous, many people consider all of them to be loathsome if not downright dangerous. People who have made a study of snakes have come to regard them highly, if not affectionately, but to most people snakes will always be repulsive creatures. Perhaps the Curse of Eden shall always remain on snakes, but whether they be dangerous, loathsome, despicable, or at best, tolerated, snakes are a fascinating subject for discussion.

In the truly wonderful biological order of creation, snakes and their relatives such as lizards, turtles, and alligators, lie between frogs and birds. Although they are always without legs, certain snake skeletons show distinct pelvic girdles and other evidence of locomotor appendages.

Despite the horror snakes have stricken into the hearts of mankind since long past ages, they have succeeded in surviving in remarkable numbers and in a great many kinds. Even the vipers referred to in the Bible survive to this day in the Mediterranean countries. This survival in the face of perpetual human persecution is in itself something to be respected.

CHARACTERISTICS

So many millions of words have been written about snakes that a discussion such as this one cannot attempt to do more than point out a few pertinent facts regarding snakes, and perhaps dispell a few of the myriad myths which have grown up around these most misunderstood of creatures. Snakes, as we have said, are legless; the lack of limbs is part of the Curse of Eden—yet students of nature give credit to snakes for an accomplishment of adaptation (or evolution) by losing their legs. Despite this seeming handicap, snakes get around with remarkable facility and turn up in places not easily accessible to creatures with four legs.

For purposes of discussion snakes may be classified

into two groups, those which are poisonous and those which are not. Most poisonous snakes are equipped with highly developed teeth which closely resemble hypodermic needles, and which are connected to the sacs which produce and contain the supply of venom. Certain poisonous snakes, such as a very small (and therefore quite harmless) ground snake, do not have the hollow fangs, and cannot inject enough venom to be harmful to humans. Of the non-poisonous snakes, some may be dangerous. An example is the boa constrictor, which crushes its prey to death before swallowing it whole.

With so large a group of creatures, exact descriptions are almost impossible. Snakes vary in size from the six inch burrowing snake to the fabulous pythons and anacondas. In North Carolina the size of snakes varies from the tiny ground snake which looks much like a large, pale earthworm to huge canebrake rattlers eight feet long and ten inches thick at the middle of the body.

North Carolina has seven species of poisonous snakes, and these may be divided into two groups. By itself is the coral snake, a relative of the cobras. Coral snakes have "fixed" teeth as compared with the movable fangs of the rattler, but can nevertheless inject venom which may be deadly in effect. The second group of snakes are called pit vipers, the "pit" being a small depression about halfway between the eye and the nostril. These include the copperhead (highland moccasin) and the water moccasin, the pigmy rattlesnake, the diamond back rattlesnake, the banded rattlesnake (or timber rattler) and the canebrake rattlesnake.

Following is a brief description and discussion of the habits of the poisonous snakes:

The Coral Snake

This is a rather small snake, not exceeding three feet in length. The head is slender with a black snout. The body is brightly colored with alternate orange and brownish black bands separated by narrow yellowish bands. It is found along the coast from about Hyde or Dare County on to Florida and the Gulf Coast. It is not especially aggressive, but a startled coral snake can easily "chew" enough venom into a victim's finger to be lethal. The venom of coral snakes has a deteriorating effect on nerve centers.

Coral snakes are burrowers, living under the debris of the forest floor or in soft earth. They come out at night to feed on other small snakes and lizards, and may be especially active after a rain. They reproduce by laying eggs in moist, loose earth or decaying vegetation.

The Copperhead

The common name for this fanged snake comes from the light brown patch on the top of the head. It may reach over 50 inches in length, and has a relatively thick body. The general color is a light brown with more or less hourglass-shaped markings over the body. The wide ends of the hourglass markings are toward the lower side of the body with the narrow part over the back.

The copperhead, like most other snakes, is more likely to slip quietly away than to attack human beings, but at certain times of the year, especially during the mating season, is apt to become quite pugnacious. They lack the warning mechanism of the rattler, and for this reason may inflict injury more frequently than do the rattlesnakes. The fangs are hollow, but not as well developed as those of the rattlesnakes.

The food habits of the copperhead resemble those of most medium size snakes. They feed on small rodents, small birds, other snakes, frogs, and insects. They give birth to up to ten live young.

The Water Moccasin

The fisherman who haunts the small lakes and ponds or the cypress-lined rivers and swamps should keep an eye out for water moccasins. These close relatives of the copperhead are numerous in the coastal swamps, and a six foot specimen is dangerous indeed. Like the other members of the pit viper group, the moccasin has a rather large, triangular head with a narrow neck and a thick body. They are among the least colorful of snakes, being a dark muddy gray-brown color, with a dull gunmetal tinge along the back. The underside is a dirty white, and bands of similar hue border the mouth and extend from the eyes to the neck. They are altogether unpleasant in appearance and manner. A number of non-poisonous water snakes resemble the cottonmouth, but the latter, as the name implies, is distinguished by the white, cottony appearance of the interior of the mouth. Nevertheless, the resemblance to harmless water snakes should be noted, and all water snakes given the respect due the cottonmouth.

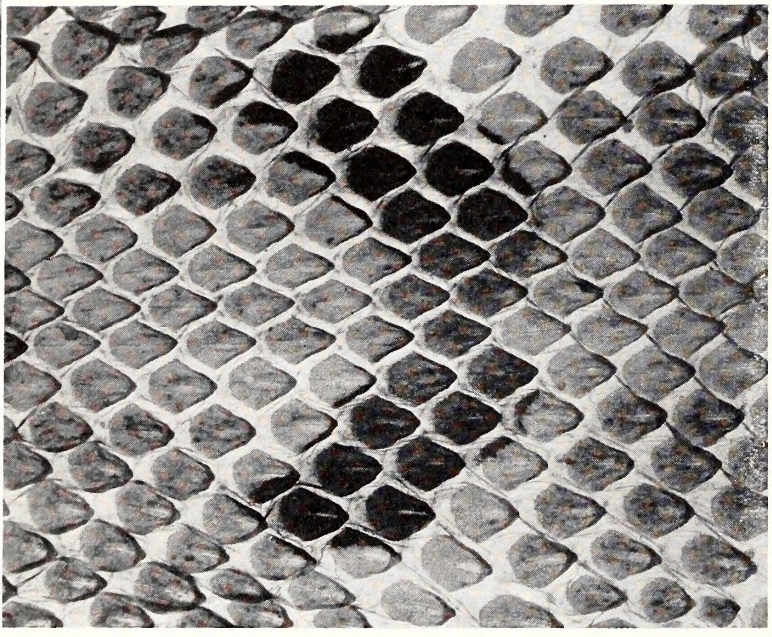
Many fishermen report that cottonmouths have attempted to get into their boats; occasionally they have

Timber rattlesnake in the typical S-shaped posture for striking. Only an instant is required for it to strike, inject the venom, and withdraw.

been snagged on a fishing hook, much to the dismay and regret of the fisherman. One Raleigh fisherman was bitten by three cottonmouths on one occasion when he came upon them under a beached fishing boat. Usually, the cottonmouth will choose to slip away quietly to avoid trouble, and deliberate attacks are doubtful.

The Massasauga

This is a rather small rattlesnake, as rattlesnakes go, and seldom reaches a length of over three feet. It is found in thickets around marshy areas and swamps. The body is medium stout, the rattles rather small, and the overall dark color gives rise to the common name "black snapper." The ground color is a dull grayish-brown, with about 32 dark colored blotches along the body. Its food consists of small rodents, frogs, lizards, and smaller snakes. Although small as compared to the canebrake rattler, it is large enough to be dangerous. Five to 12 young are born alive, 8 or 9 inches long. This



Closeup of the shed skin of a timber rattlesnake. Soft, elastic skin between the seales permits snakes to swallow prey larger around than themselves.

is the only one of eight Eastern North American poisonous snakes not found in North Carolina.

The Pigmy Rattlesnake

The pigmy is another resident of the coastal plains counties. It is the smallest poisonous snake east of the Rockies, but is capable of biting dangerously. It is rather spotted in appearance, with from 30 to 36 dark splotches over an ashy-gray or grayish-brown ground color. The colors and pattern closely resemble the harmless hognose snake or puff adder.

The body is medium thick and the neck slender. The rattles are very small, and consequently cannot sound a loud warning when the snake is disturbed. Although the pigmy is small, it is dangerous partly because of the small rattles, and because of the highly toxic quality of the venom.

The Diamondback Rattlesnake

This large snake, 7 or 8 feet long, may be found in central coastal and southeastern North Carolina, although it is by no means numerous. The name comes from the distinct dark diamond shaped markings on the back, each surrounded by a light colored border. The ground color is an olive gray to tan or brown. Like the other rattlers and the copperhead and cottonmouth, the diamondback has the characteristic triangular head with the slender neck. Diamondbacks are very thick bodied and are powerfully muscled. Because of their large size they are extremely dangerous. In large specimens the fangs are an inch long from base to tip, and longer if measured on the curve. They are relatively pugnacious, and with their large size and wicked fangs, can easily inject a lethal dose of venom. The rattles are correspondingly large, and make a loud buzzing sound.

The diamondback resides in the central coastal plains counties around palmettos, rotten stumps, fallen logs, and hollow trees. The large size enables it to eat full grown rabbits as well as a variety of rodents, birds, lizards, frogs, and other snakes. Seven to 18 live young are born, ranging up to 14 inches in length at birth.

The Timber Rattlesnake

The scientific name given to this species beautifully describes its nature—*Crotalus horridus horridus.* It is a dweller of the hilly and mountainous woodlands, and is usually extremely pugnacious. Adults reach six feet in length. The ground color is a yellowish-brown or tan, with a series of dark markings somewhat in the shape of a staff sergeant's chevrons. The last inch or so of the tail ahead of the rattles is a velvety black. Some specimens, especially in the mountains, are entirely black except for yellowish borders on the markings. These are called black rattlers, but are not a distinct species.

Timber rattlers are night feeders, and thus seldom seen in the daytime unless disturbed from their hiding places. In the fall they group together in "snake dens" on the sunny side of slopes or ledges.

The food consists of squirrels, chipmunks, rats, mice, and small birds. The young are born in litters of from 5 to 12, eight or nine inches long.

The Canebrake Rattlesnake

Canebrake rattlers haunt the swamps and woods of the coastal plains counties, and are most numerous in the thinly populated areas of the coast. They are probably our largest rattlesnake, reaching lengths in excess of eight feet, with bodies ten inches in diameter. The fangs are correspondingly long and the rattles are large.

The markings are generally similar to those of the timber rattler, but the general color is much lighter with a coppery or pinkish ground color and darker bands. They are distinguished, however, by a reddish stripe from the head almost to the tip of the tail, and a dark cheek band. Food consists of rabbits, squirrels, rats, mice, and occasionally birds.

The young are born alive, about 10 to 17 in number and about 12 inches long. Its size and strength make this a truly dangerous snake, although it is not likely to be encountered near human habitation.

Some Questions About Snakes

Many are the myths that have sprung up about snakes. The most unfortunate one is that all snakes are poisonous, and that all snakes will bite. Poisonous snakes are adapted to killing their prey by injecting poison through the fangs. Such harmless creatures as the hognose snake or puff adder cannot be induced to bite under any circumstances, preferring to scare enemies by spreading its neck and hissing loudly. Should this technique fail, the hognose plays 'possum. But he will never bite a human.

Is it true that snakes will strike only if they are coiled? Although most venomous snakes habitually coil when danger approaches, they will bite any time and in any position when really in danger.

How far can snakes jump? Snakes cannot jump at all. At best they can strike a distance of about one-third to one-half of their total length; thus a hunter with knee boots is relatively safe from a small massasauga, while an eight foot canebrake rattler could reach well up to their thighs.

Do snakes usually travel in pairs? Snakes are naturally solitary creatures, pairing only during the mating season, and grouping together at denning time as in the case of timber rattlers.

Are snakes poisonous from birth? Newborn rattlesnakes or copperheads and their relatives are born complete with fangs, poison, and in rattlesnakes a tiny button in lieu of rattles. They could inflict a fatal bite.

Do poisonous snakes bear young and all others lay eggs? Most poisonous snakes bear young, but the coral snake is an exception to this. It lays eggs. Several species of non-venomous snakes bear young.

Does a rattlesnake warn more than one time before striking? He may strike without warning, strike and rattle at the same time, or buzz several times before striking. Don't count on the rattle to warn you. It may not be sounded in time, or if wet you won't hear it at all.

Do other snakes vibrate their tails like rattlers? Several snakes, both poisonous and non-poisonous, vibrate the ends of their tails when startled.

Do snakes care for their young? As soon as the eggs are laid or the young are born, they are left to themselves. There is no deliberate parental care.

Do snakes swallow their young? This has been reported frequently, but it is highly doubtful that snakes swallow their young to protect them from danger.

Do snakes sting with their tails? Certain non-poisonous snakes are called "whip" snakes from their resemblance to a bullwhip. They do not, however, whip their victims with their tails, and no snake has a poisonous tail.

Several copperheads and a water moccasin live together at the N. C. State Museum. Rattlesnakes are also on display.

Are snakes' tongues poisonous? Indeed not. Snakes are probably near-sighted, and their tongues are used as sensory organs; hence the frequent rapid darting of the tongues.

What are hoop snakes? They are a completely mythical and non-existent snake which is reputed to take its tail in its mouth and roll along like a hoop.

Do snakes milk cows? This is a common belief, but no one has ever submitted bona fide evidence that it occurs.

Do rattlesnakes always warn before striking? Years ago in Florida a chain gang of 54 convicts was walking through the woods single file. The fifty second man stepped on a six foot diamondback. No one heard the snake rattle, and it bit none of the men.

Although snakes can replace small sections of their tails, a snake cut in pieces cannot reassemble. You can't tell the age of a rattler accurately by the number of rattles. All snakes shed their skins from time to time, and usually a new rattle is added when the skin is changed.

• CONTINUED ON PAGE 20 •

Play safe! Learn to identify poisonous snakes. Some harmless snakes resemble dangerous ones, as does this spreading adder (black phase).

Read This Success Story . . .

IT CONTAINS SOUND IDEAS FOR WILDLIFE CLUBS

DURHAM COUNTY

AFTER SIX YEARS OF OPERATION, many of our wildlife clubs have made notable progress. Some more, some less than others. If there is a tendancy to credit this progress to luck, the story of the Durham County club should prove that the success is due to interest, planning and work and very little magic is involved.

"Presto," says the magician and then pulls a very live bunny from the silk hat, which only a few seconds ago had been shown to be completely empty. His audience, from the awe-struck little boys in the front row, to the grown-ups, is delighted with the magic. But is it magic? It is almost mysterious how a series of impossible feats can be accomplished before our very eyes. We know that there was nothing miraculous or supernatural involved. The success of the act was due to a high degree of organization of all the skill, knowledge, and faculties at the command of the performer, plus almost complete cooperation by the audience.

When we look at any successful project from this angle we find that success can be directly attributed to the degree of organization of resources and the cooperation between all factors. Very seldom is success due to chance or luck, and this applies not only to church bazaars, charity drives, clubs of all sorts, but also to the every day business of living.

An increasing number of sportsmen and women in North Carolina are becoming more seriously concerned with their wildlife conservation program. Their concern has been so widespread and mutual that it is only natural that numbers of county groups formed themselves into wildlife clubs and, in turn, these clubs formed the nucleus of the North Carolina Wildlife Federation.

With the intense interest in the issues at stake, as early as 1945, the vast majority of clubs had no problem of providing stimulating programs to hold the members' interest. The story of the unsuccessful attempt in the 1945 General Assembly to reorganize the administration of the wildlife resources and the successful attempt occurring in the 1947 session is too well known to require more details here. However, this legislative activity provided the rallying cry for the sportsmen and their clubs.

Activities are a "must" in a successful club program. Field trials promote interest, fraternity, and membership.

As it was natural for the hunters and fishermen to rally to the cause of conservation in those early days, it was just as natural for some of those groups to disintegrate after the major objectives had been achieved. Yet, in the four years since 1947, the groups that have been newly formed and the older clubs that have been revived have served to maintain the Federation as a potent force in forwarding the state-wide program to the Wildlife Resources Commission.

In the beginning we were talking about the ingredients for a successful club and, while we shall cite one group in particular, there is no intention whatever to slight any other group. One needs only to witness the activities records of the Iredell, Buncombe, Stanly, Forsyth, Gaston, Mecklenburg county groups and many others to know what we mean by a successful club program.

Since the formation of the Durham County Wildlife Club occurred in 1945, let us look at their record of activity and achievement. Many of you remember how your group started—a few interested men meeting one night, the selection of officers and the plans for the missionary work. Dr. W. R. Stanford became the first president of the Durham group and he and his cohorts launched the campaign in Durham County which quickly brought the membership to the five hundred mark. Things were going along in fine shape when Doc was succeeded by Frank T. Erwin, who presided during the busy times of 1946-1947. As we said before, this was the year in which the Wildlife Resources Commission was established and the year which put such a strain on many clubs. The major goal had been gained and the question became "What now?" Erwin was appointed to the first Wildlife Resources Commission and later became its chairman.

During the term of Jesse W. Cole, during 1947-1948, the first bird dog field trial was held. Twenty-eight dogs owned and handled by members participated in a new type of game and spectacle for the public. Trial activities

By WIN DONAT

WILDLIFE CLUB

have become such an institution that one or more have been held each year following. All who planned and put on this program did a job of work, yet no one worker suffered. New interests developed as several members planted food patches in an effort to improve the bird population on the trial grounds.

During the summer of 1948 several hundred folks were treated to an outing at Reuben Smith's lake. Activities were planned to suit any taste as there were shotgun and rifle shooting contests, plug and fly casting contests, wonderful prizes to the winners, an all-pervading spirit of good fellowship and fun and, finally, a barbecue dinner and entertainment during the evening. The prizes were donated by local merchants. This venture was a success also and of great benefit to the club in the form of advertising. We must not forget to mention that the first of the total of three beagle trials was held this year and the forty-two flop-eared little hounds in the first trial put on a real show for the folks.

One of the most successful and popular activities for which the Durham Club is known far and wide is the skeet and trap lay-out. Shooting literally started off with a bang when George Lyons became president in 1949. Lyons is a consistent clay bird shooter and is handy with a handgun too. It must be remembered that this sketch covers only the highlights; therefore, let's point out that when there is spirit and will to do in any organization things get done. The accomplishment of a series of projects develops leaders or spark plugs. Claiborne Woods and Hubert Gerrard carried the ball for the shooting activity. They negotiated with member Harvey Rape for the use of a 500 acre tract lying just outside the city limits. In the first year, Woods and Garrard not only produced one skeet field but were so sold on the idea that they financed the cost of operation out of their own pockets, repaying themselves as money came in. Next came a trap field. As interest increased the demand for more facilities, both fields were moved and the second skeet and second trap field were built with the aid of Roy Perry and others who took care of the heavy work. Since the time that the club activities became centered on the present area, a fine pond has been built and stocked, and over 25,000 bicolor lespedeza and multiflora rose plants and numerous annual food patches have been established. The membership has received from the Commission and planted over 220,000 bicolor seedlings!

By the time Harris Lawson was elected in 1950, the affairs of the club had reached the realm of big business. In two years the physical assets at the skeet and trap field had grown from one hand trap to a value well over eight thousand dollars. The first North Carolina State Open Trap Shooting Championship and the Bright Leaf Open Skeet Championship brought in entries from all over North Carolina and seven neighboring states. The gross receipts from these two events alone were nearly five thousand dollars.

It is hard to believe that club operations on a scale as large as these are possible, yet it is a fact that *any club* can develop projects which become popular institutions. For instance, a committee from the senior club sponsored a Junior Wildlife Club in the Carr Junior High School. Herman Nelson, a civics teacher and athletic coach, became the faculty leader of the group. The meetings sparkle with the interest and enthusiasm shown by the members and the well-planned programs attract the adults, who are always welcome. Can you imagine any other group of teenagers rushing to the school gym and breaking out the bait casting equipment and targets for a keen casting contest between boys and girls? They can shoot too! The skeet fields mentioned before have been the scene of many a pleasant hour of shooting instruction under the guidance of the seniors. The juniors willingly pay their own way. When shooting and casting abilities are combined with other skills, graces and beauty in a Tar Heel Diana, we find the whole state paying homage to her in honor of her selection as "Miss Wildlife of 1950." Such an honor came to Miss Carolyn Thornburg, a member of the junior club.

Hubert Garrard, the present president, has many plans for the year. In addition to the continuation of the established activities, the senior club is sponsoring school participation in the various contests and projects of the Wildlife Federation. New trap fields to accom-

• CONTINUED ON PAGE 23 •

Photos by Win Donat

On the skeet field. A good club objective is to teach youngsters the principles of good sportsmanship.

COLOR PERCEPTION IN FISH

A Tom Farley Sports Feature

IS A FISH COLOR BLIND?

Probably no other question has been kicking around angling circles for as long as this one. And, to the thinking of some fishermen, it's still not definitely answered.

But scientists, as well as fishermen, have been poking into the controversy for the past century or so. Scores of their reports were brought to light recently by engineers of the Horton Bristol Manufacturing Co., who researched the color question thoroughly in the course of developing a new set of colored fishing lines.

From these reports it's clear that scientists haven't agreed entirely on fishes' color perception either—even though their experiments followed the same four general lines. These included: 1. Using colored lights to see if fish were more attracted to certain colors than to others. 2. Giving fish a choice of several different colored foods and observing if they could distinguish among them on the basis of color only. 3. Checking fishes' reactions to colored backgrounds. 4. Attempting to train fish to associate a color with an experience—by turning on a certain color light at feeding time, for example.

In one of the early experiments (in 1884), a German scientist, Graber, used the first two methods in a series of tests on four species of fish. He concluded that his fish definitely had the ability to tell one color from another.

Quite a number of years later, between 1910 and 1914, a scientist named Hess made the same experiments with several species of young fish—and came to a completely opposite conclusion. He conceded that fish appeared to react to color, but only as a color-blind man would. That is, they could recognize the intensity of a color, but not its hue.

Among the most interesting tests of fishes' color vision are those made by Dr. Frank A. Brown for the University of Illinois about fifteen years ago. In one of his tests Dr. Brown lowered a glass tube, wrapped with a colored band, into a tank of largemouth bass. When one of the fish swam near it, he was fed. In a short time all of the bass realized that this color meant food and they responded accordingly. Then other colors were wrapped around tubes and put into the tank—but when a bass swam to these he was given an electrical shock. As a result of this training all of the fish soon were able to distinguish among green, red, yellow, and black.

Dr. Brown concluded after thousands of tests like these that bass see color about the same as a man does who is looking through a yellowish filter.

One of the strongest arguments in favor of a fish's ability to see color came out of tests conducted by the scientists Kottgen and Abelsdorf. In all eyes — fish, human, or other animal—the only identified substance which permits color perception is a chemical known as rhodopsin. By comparing rhodopsin taken from human's and fish's eyes, the scientists found that each had virtually the same qualities.

If fish can see color, as the mass of scientific evidence seems to show, the fishing tackle business is pretty well on the right track. A fisherman can buy lures in every color of the rainbow—and many do.

However, the most commonly used color in bait casting lines is still black, and why this is so is as mystifying as many other sides of this confusing color business. As Dr. Brown and numerous other scientists have pointed out, black is a shade that fish can see very clearly. And neither black nor any one color blends in with all types of water.

The most significant break from tradition is seen in the new colored lines designed to match the water colors and conditions met in lake, creek, river, pond, and ocean fishing.

A good many anglers will take to the idea of such blended lines because it agrees with what they have been saying all along. Others — the ones who don't believe that fish can see color — probably wouldn't change their minds for a handful of bright green dollar bills.

It all goes to make fishing the interesting business that it is.

Fur-Seal Conservation Worth Millions of Dollars

A net profit of $11,500,000 has been realized from all fur-seal work in the Pribilof Islands since the resource was taken over by the Federal Government in 1910 to prevent extinction of the animals, the Fish and Wildlife Service, Department of Interior reports. This is the sum in excess of all appropriations for fur-seal conservation, the value of treaty-provided allotments of pelts to Canada, and all other expenses incurred in taking, preparing, and selling the pelts, meat, and oil from fur-seal operations.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

The Wildlife Resources Commission's crack combination of patrol plane, patrol boats, wildlife patrol, wildlife protectors and two-way shortwave radios made another spectacular haul of springtime shorebird shooters recently. Last year 86 men were haled into federal court for shooting loons during the spring migration along the Carteret coast.

Apparently warned by last year's crackdown, only eight violators showed up in the early hours of morning to shoot loons, Hundsonian curlews and other protected migratory birds. At about 11:00 p. m. on the night before the raid, the Commission's patrol boat Sea Peep put out of Beaufort and headed for Shackleford Banks. Aboard were Raymond Watson, New Bern, Supervisor of Wildlife Protection in District 2; William Kinsey, Wildlife Patrolman, Jacksonville; D. B. Bell, Wildlife Protector, Lenoir County, Kinston; Melvin Hill, Snow Hill, Wildlife Protector in Greene County; George Hudson, Bayboro, operator of the Sea Peep; Alex Davis, Marshallberg, Carteret County Wildlife Protector; C. B. Spain and Charles Overton, Wildlife Protectors of Beaufort County, and Robert Halstead, Washington, U. S. Game Management Agent, U. S. Fish and Wildlife Service. These men spent the night aboard the Sea Peep, going ashore about 4:00 a. m. The raid was begun at about 7:00 a. m. and the eight violators were arrested at about 7:30. G. A. Jones, Jr., Chief of the Commission's Wildlife Protection Division piloted the plane.

* * * * * *

The seed packet plan of the Wildlife Resources Commission has been highly successful this year with 3,600 ten-pound packets of mixed annual seeds sent out free of charge to farmers who will plant them in odd corners of land for wildlife food and cover. Demand for the packets was extremely heavy, with 2,400 packets on the original order and an additional 1,200 ordered to supply the demand.

* * * * * *

The month of May saw both salt water and fresh water fishing get into full swing. Salt water species began biting earlier than usual with a heavy run of channel bass showing up in April. Fishing in inland waters was slower getting under way this year due to prolonged cold weather over most of the state. Trout fishermen in the mountain counties reported a large number of native trout showing up in their catches.

* * * * * *

Fresh water lake and stream fishermen were warned to observe areas which have been set aside for game fish spawning. Nearly all important game fish waters have certain areas posted against fishing to give game species such as bass, bream and crappies an opportunity to spawn.

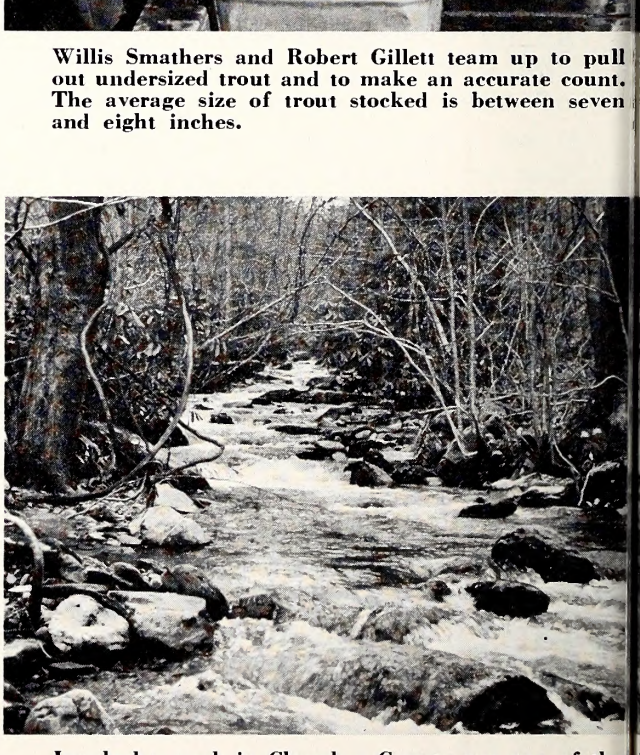
Operation T

North Carolina's preseasonal tro and before April 15, nearly 100,0 Let's go to the Waynesville H

Preparations begin early on a trout stocking day. Water is lowered in the rearing pools, and the trout are scooped up in nets. Leo Rieger, right, hatchery superintendent, checks the general condition of a batch of rainbows. Trout are stocked according to a carefully worked out schedule. The number of fish to be placed in each stream is determined by a trained fisheries biologist.

Willis Smathers and Robert Gillett team up to pull out undersized trout and to make an accurate count. The average size of trout stocked is between seven and eight inches.

Prior to trout stocking, interested sportsmen are notified of the time and place and invited to help. Many wildlife club members and individuals have cooperated wholeheartedly with Commission personnel. It has resulted in more fish being stocked. Trout planting is not all fun, however, for it may mean hours of carrying heavy buckets over rough mountain terrain. This trip, Ray and Grady Hogsed and C. D. Dorsey of Andrews gave valuable assistance.



Junaluska creek in Cherokee County was one of the streams stocked. Only those streams which are determined as trout waters by scientific surveys are stocked with trout. No fish are released in private waters.

PHOTOS B

t Hatchery

ng began this year in March,
of angling size were distributed.
for a trout planting operation.

After the count is determined, the trout are weighed in a known amount of water. Detailed records are kept on trout production. Then the fish are loaded on a truck and rushed to the planting site.

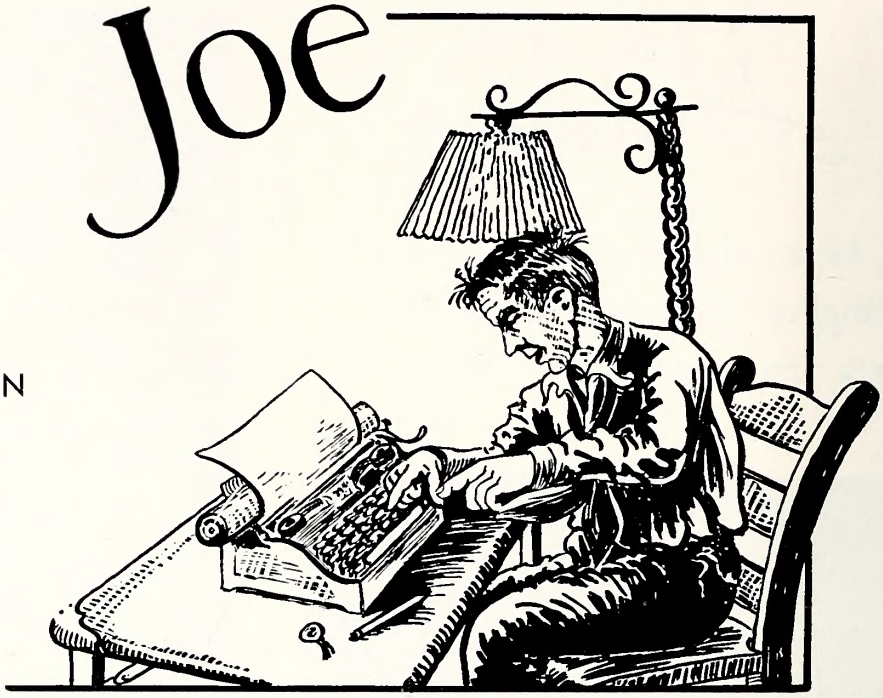
Planting rainbows. If streams are accessible, trout are well distributed along them. In rough country, the fish are released at key spots and allowed to scatter themselves. See next photo.

K DERMID

The trout distribution units used by the Wildlife Resources Commission were designed by Maurice Bryant, trout production supervisor. Each consists of four separate compartments and a pump for circulating and aerating the water. Up to 1500 trout of angling size can be safely transported for twelve hours. Above, trout are being unloaded for planting under the supervision of wildlife protector Arnold Dalrymple of Cherokee County.

There they go! Now it is up to the angler to make the harvest. When stocking is completed, the wildlife protector and cooperating sportsmen sign a statement indicating that the trout were placed in the waters designated. More trout will be added to the streams as they become depleted during the fishing season. In addition, hundreds of thousands of fingerlings will be planted in small non-fishable headwaters. They will move downstream as they grow larger.

Dear Joe



WILDLIFE RESOURCES COMMISSION
Raleigh, North Carolina
Gentlemen:

How Can I Get Started in The Business of Raising Bait Minnows?

Yours truly,
Joe Doaks

Dear Joe,

There are just four things you need to make a success of the business of raising minnows for bait. The first is—customers. There is no use in raising the finest minnows in the world if there is no one to buy them. It is important to consider your location in relation to a major fishing area, because a fisherman usually wants to buy his minnows near the place he is going to fish. He usually loads up his minnow bucket with a lot more fish than can live in so little water, and so he wants to buy his bait within a few minutes drive of his favorite fishing spot. In your case, Joe, this is no problem since you are so close to the reservoir. If you lived farther away, you would have to get someone at the lake to build a holding pool and sell them for you. Better still, you could sell them wholesale to a bait dealer.

The next thing you need is a pond. We are sending you a bulletin on the construction of farm ponds which will tell you how to build one. After you read it over, it would be a good idea to stop by the Soil Conservation Service office when you are in town and ask them to come inspect the place you have selected to build it. They will be able to tell you whether there is enough clay in the soil to keep the pond from leaking after it is finished, and will give you some good ideas on how to get the pond started and how much it will cost. They probably will be able to bring out a transit and stake out the exact location of the footing of the dam and also the water line. A two-to-one slope is enough on the back of the dam if you get a good sod on it, but on the side of the dam toward the water you should have a three-to-one slope so that the fill will not sluff off and erode.

It is particularly important, too, to have a drain pipe that will completely empty your pond. There will be times when you will want to drain it down to clean it, to take out wild fish, and to completely harvest your crop of minnows.

Come to think of it, Joe, you don't have to build a pond at all. You already have one. Remember that little pond down in back of the orchard that you fixed up for the kids to swim in when they were small? If you would clean that up and put a drain in it, you would have a fine minnow pond. Sure it's small, but that is just what you want. It is about a quarter of an acre, and that is plenty. Minnow ponds are usually from a half acre down to a tenth, and a tenth of an acre would be a square sixty-six feet on a side. That is not much water, but it will raise a lot of minnows. By keeping the pond small it is a lot easier to get the fish out when you want them, and you can get better production out of two small ponds than one large one.

The third thing to consider is what kind of minnows to raise. It would be a good idea to start with Golden Shiners, because they are well adapted to warm water ponds, require little care, and will give you a good crop. Small ones make fine crappie bait, and within a year they are large enough to use for bass. You can seine up a few in nearly any pond to use as brood stock in getting started, and after the first year you will have plenty of them. Incidentally, if you never heard of the Golden Shiner, you might try Roaches, Shadroaches, or just plain Shiners. It's all the same fish.

The fourth thing you need to succeed at this business is a little basic information on how to handle and care for the fish. We are sending you a leaflet on the propagation of Golden Shiners which will be of some help. Before you start, though, send thirty-five cents to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. and ask for a copy of Circular No. 12, U. S. Fish and Wildlife Service,

Department of Interior, entitled "Propagation of Minnows and Other Bait Species" by Dobie, Meehan, and Washburn. It is a fine bulletin and will give you the straight dope on raising all kinds of minnows. If you will read it before you start, it may keep you from making some expensive mistakes.

There is one more thing you will have to do, Joe. You will have to talk Mary into letting you have her little goldfish pool in the front yard to use as a holding pool. You may have to buy her a new hat, but it will be worth it to have minnows ready for sale right there where you can dip them up when a customer stops. You will need to keep the water running through it, because there will be a lot of fish there in just a little space and the fresh water will be needed to provide enough oxygen.

In your brood pond it is not necessary to feed the minnows. Just fertilize it the same as you do your two acre fish pond of bass and bream. Use the same kind of fertilizer, too. We had a letter from one man who tried raising minnows for the first time last year. He had a half-acre pond and stocked it with Golden Shiners. His crop for the year was thirty-three thousand minnows. He sold eighteen thousand at fifty cents a dozen for an income of seven hundred fifty dollars, and had fifteen thousand left over to start this spring. That is not bad as a side-line in addition to his regular income, and you will have a hard time finding a more profitable use for a half-acre of land.

There is another aspect of this minnow raising business which is important, too. It is good conservation. Fishermen want minnows for bait, and every year the demand for bait minnows is increasing tremendously. When the demand was small, it was reasonable for the man who wanted to sell minnows to seine some from the public waters and keep them ready for the fishermen. But it is no longer small business, Joe. We had a request a few weeks ago for a permit to let a man take fifteen thousand dozen minnows from the public waters for sale. Because it is getting to be big business the Wildlife Resources Commission has had to set a limit on the number of minnows any one person may take. It is recognized that the minnows in the public waters constitute an important part of the food supply for the game fish, and if the food is taken away, the game fish populations will suffer accordingly. Some states absolutely prohibit the taking of minnows from public waters for sale. In the operation of your minnow hatchery, you will not only be providing yourself with an additional income, but you will be helping the cause of fish conservation.

When you get your business under way, here is a good tip for handling minnows that you may want to pass on to your customers. Fishermen often complain that the minnows in their bait buckets die before they can drive to their fishing spot and get the bait bucket in fresh water. Tell them to go to the store and get a funnel and three or four feet of rubber tubing. Open the cowl ventilator and tape the funnel in place behind the opening. Put one end of the tubing on the funnel and the other end in the bottom of the bait bucket. Then, as they drive along, the funnel will collect air and the tubing will send it up through the water in the bucket. Their minnows will survive a long, long ride that way, and satisfied customers is something every business must have. Good luck.

Yours,

Harry Cornell

Golden shiners are good minnows to raise for bait. They are well adapted to warm water ponds, require little care, and will produce a big crop. Brood stock is easy to obtain, for shiners can be seined from nearly any pond. The golden shiner is known locally as roach, shadroach, or just shiner.

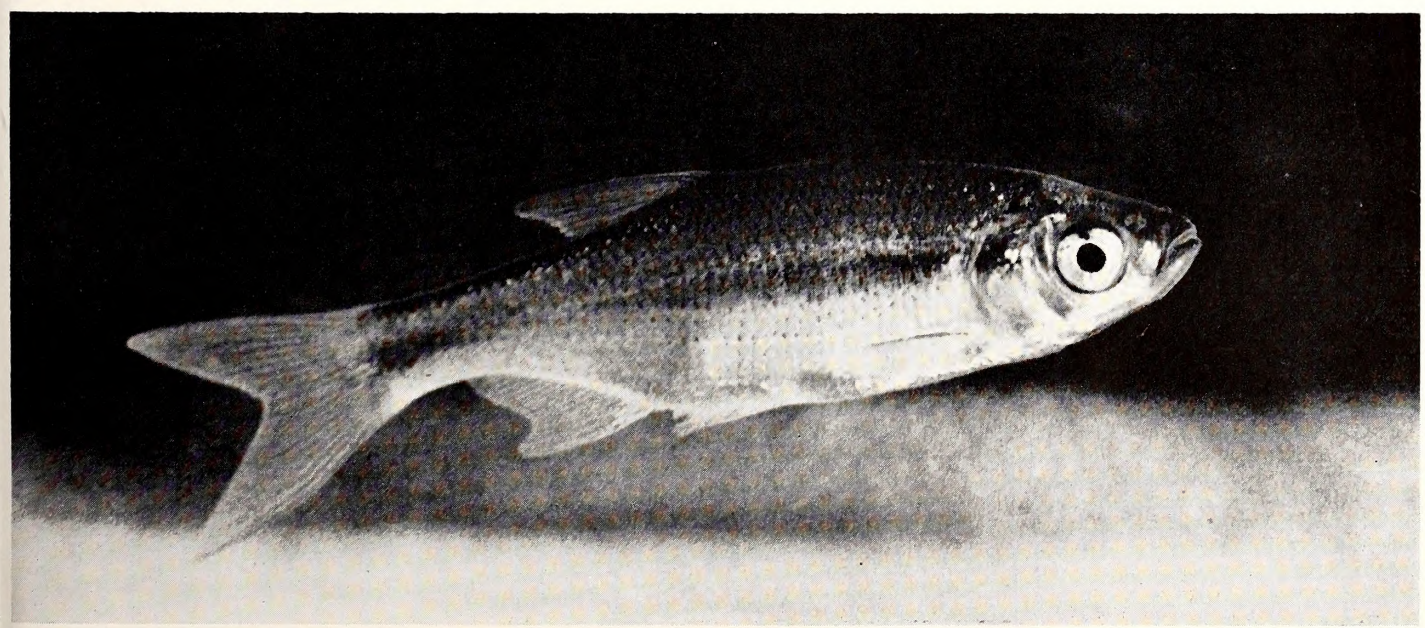


Photo by Jack Dermid

Mr. Farmer Repays a Visit

By Joyce Ballantyne

A Story Without Words

(Courtesy of Sports Afield Magazine)

Notes from the field

by **KEN WILSON**
Fur Resources Biologist

Fur Dealer Donates To Educate

Frank Pearson, of North Wilkesboro, has been buying fur in North Carolina for over twenty years. During this time, many thousand muskrat, raccoon, mink, fox and other peltries have passed through his hands. For years, Pearson bought furs that were wretchedly skinned and cured. Mink stretched on muskrat boards, muskrat and raccoons laden with great gobs of fat, shrivelled, half stretched pelts. And because the merchandise was inferior, both the trapper and Pearson received below par prices. This went on for years. But one day an idea was born. Our fur dealer friend decided to educate the trapper by offering better prices for better merchandise. When poorly processed furs arrived, he talked to the trapper, showed him properly handled pelts and then to drive the lesson home, gave him wire stretchers for muskrats and mink boards. Almost immediately, fur received showed better handling. The trapper received higher fur values and so did Mr. Pearson. The experiment worked so well, wire stretchers and boards valued at nearly $200 have been donated to the trapper. Where other fur dealers have considered the trapper and his poorly handled furs a hopeless case, this man has seen fit to invest a few dollars in education and it has paid off. Other fur dealers in N. C. and over the country could heed Pearson's example and prove that educating the trapper pays dividends for everybody concerned.

Deer Flee To Water In Northwest River Marsh

That deer are quick to recognize and take advantage of situations favorable to their survival in times of desperate need was convincingly demonstrated on the Northwest River Marsh in Currituck County on several occasions during the past deer hunting season. Time and again the cry of the pack could be heard in hot pursuit of some unlucky deer. Each time the pattern of chase led directly to the refuge, and each time it sounded as though the hounds were about to overhaul their unlucky victim. Then, the unexpected — I'm sure the dogs were surprised — happened. All of a sudden, complete silence . . . The fun for the dogs was over. And some hunters were disappointed, too, because the deer had led their dogs to a 100-acre diked marsh covered with 6 to 12 inches of water. The confused hounds never were seen entering the impounded area but always searched high land bordering the marsh in hopes of picking up a fresh trail. In the meantime, the deer was enjoying a rest in the precious scent destroying water and no doubt was chuckling happily to himself.

Black Muskrat Along North Carolina Coast

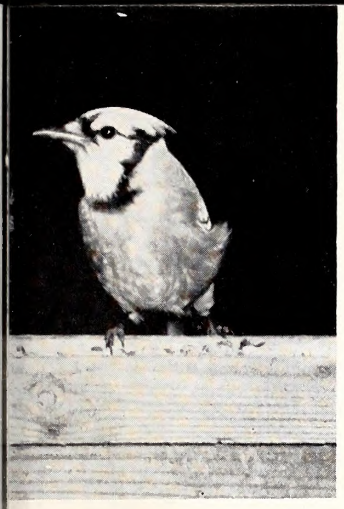
Many trappers don't know it but from 30 to 50 of every one hundred muskrats from coastal Currituck County are black. Fur dealers report the occurrence of black muskrats in varying numbers as far west as Raleigh. Known in scientific circles as the black (on back) and tan (on belly) muskrat, specimens of this color phase are found coastally as far south as Pamlico Sound north to New Jersey. Its fur, which approaches ebony black in some specimens, makes a beautiful, natural black fur coat, popular in France. Knotts Island on upper Currituck Sound is not only the heaviest producing muskrat section of the State, but also yields the largest number of black muskrats. A totally black muskrat is also found in this section—about 2 in every 100 'rats—and along with its black and tan cousin is usually considered of more value by local fur dealers. Probably that's one reason why Knotts Island muskrats in mid February, 1951 were bringing the trapper $3 each to $2.75 elsewhere in the State.

Cannibalistic Cottonmouth

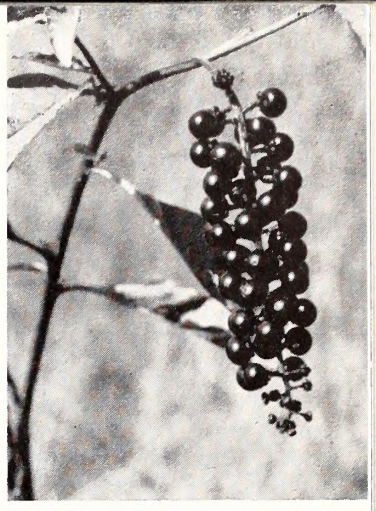
On October 5, 1950, while patrolling a muskrat management diked area in the Northwest River Marsh, I suddenly stumbled onto a small (30 inches long) but very ill-tempered cottonmouth moccasin *(Agkistroden piscivorous)*. It opened its mouth menacingly and might have struck but I hit first. Following decapitation and a post mortem that revealed no food, I went on my way, leaving it beside the dike, its heart still beating. Four days later, while scouting for muskrat sign in the same area, I again spied a cottonmouth, this time a big one, basking in the sun on top a mowed pile of needlerush. My heart skipped a beat as the deadly reptile trained its beady eyes on me and jerkily coiled into a position to strike. Without taking time to wonder about its huge girth, bigger around than my arm, I pinned it down with a forked stick, picked it up and cut its head off. By this time I could see that the 47-inch long moccasin contained something large. No babies could bloat a snake that size; besides, young moccasins in the locality had been born in August and early September. But, I thought, maybe we'll find a large fish or muskrat. Then I operated. Imagine my surprise, if you will, when the 30-inch cottonmouth, victim of my axe four days before, dropped out. I shuddered! Maybe it was a cousin, a brother, or a sister. I didn't know. I did know, however, before its afternoon nap was disturbed, it looked like what I have always imagined a happy, well-fed snake should look. But to think the reptile had chosen to stuff itself with its own kind. Ugh!

Nature PHOTO QUIZ

Photos by Jack Dermid



Everyone should know this noisy mischief-maker.



2. Purple stain for Indians; food for wildlife.

Answers On Page 23

Dainty mouse with white feet and underparts.

4. North Carolina's state flower produces food for wildlife.

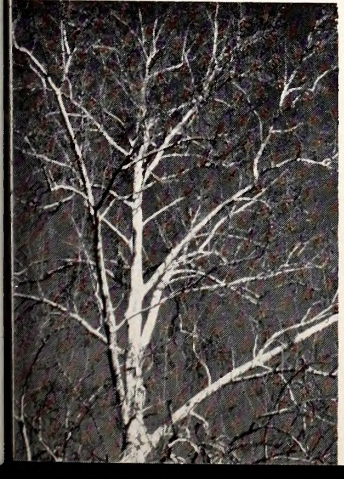
5. It is rare, indeed, for this mammal to be killed by a car.

Harmless snake famous for bluffing and playing 'possum.

7. Beware, Mister Fox, when a pack of these hounds is unleashed.

8. Only male duck with curled up tail feathers.

Tree that sheds both its bark and leaves.



WRITE ANSWERS HERE

90% = EXCELLENT 70% = FAIR

80% = GOOD 60% = POOR

1 _____ 6 _____

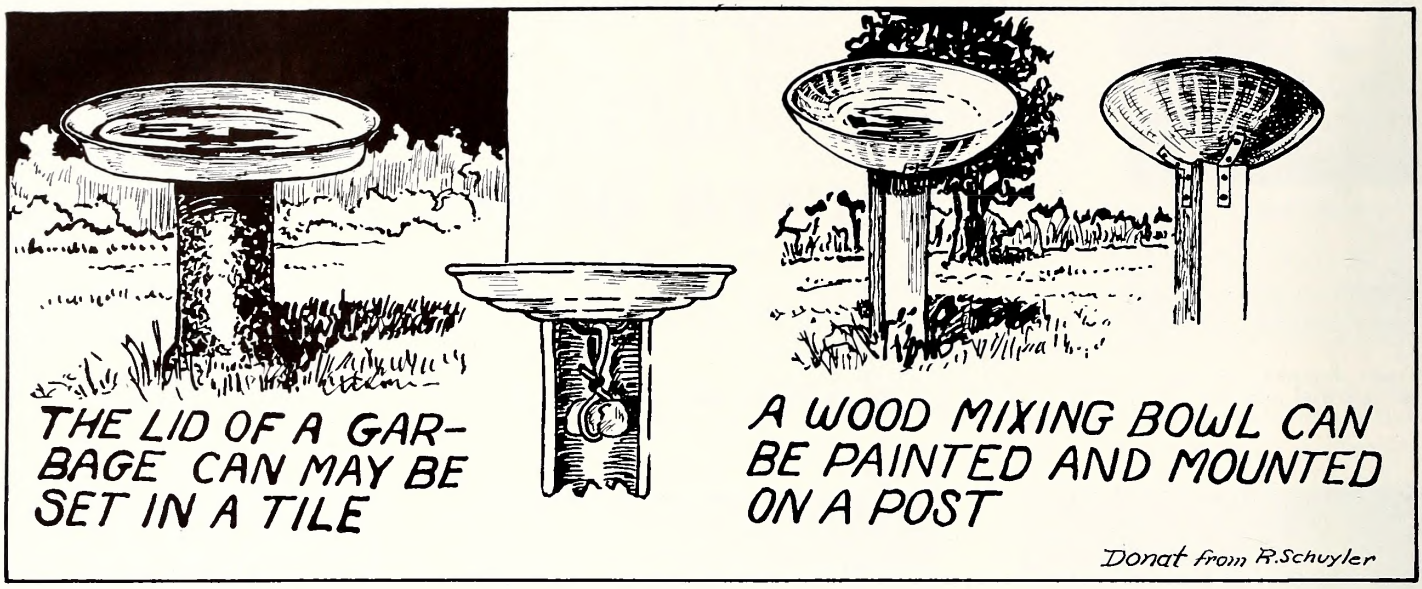
2 _____ 7 _____

3 _____ 8 _____

4 _____ 9 _____

5 _____ 10 _____

10. Acrobats could take lessons from this nocturnal animal.



BACK-YARD CONSERVATION

Baths for Birds

By **BILL HAMNETT**
Wildlife Education Representative

IN THE MARCH ISSUE of the magazine there was offered "Houses for Rent" and from responses that have come into the office many houses were put up and all rented. We hope many more were built and put up and that they have served to stimulate further interest in birds as an incentive toward conservation.

Now, there is another item we need to include to complete the housekeeping activity of the neighborhood birds. Birds like to take a bath and they do just that. Somewhere around your house you can put up a good, substantial, and attractive bird bath to which many kinds of birds will be attracted. The two baths illustrated above are relatively easy and reasonable to construct and will satisfy many purposes. From these two ideas you can, in all probability, find some materials around the house that will serve the purpose just as well.

The need of the bird bath is for the bird to have a place to bathe, not to go swimming in. The pool should slope gently from all sides and should not be more than two and one-half inches deep in the middle. Little stones placed here and there not only provide a rustic effect but furnish excellent points at which the birds can bathe at a depth that suits them. Some birds will not bathe if they think they might slip in. Avoid smooth surfaces on the bottom of the bath.

The rapid rate of water evaporation during the hot summer months means you will have to check on the bath every four or five days to add more water. Each time you need to add water clean out the bath to keep the container fresh and clear. It is a good idea to place the bird bath in a shady spot in or near your garden.

But a home with bath is not everything. The environment or surroundings in which the bird lives is as important. Would we enjoy living in a group of farm buildings surrounded by only acres of barren fields? Likewise, of what use is a home for birds, no matter how attractive or well prepared, if there is no food, no shrubs, no trees, no water from which birds can secure ample sustenance and protection from enemies?

• CONTINUED FROM PAGE 7 •

Myths about snakes rise out of fear and superstition. These myths make interesting stories, but snakes are interesting enough of themselves without fictitious fabrication.

Treatment of Snakebite

Common sense following of these simple rules can save your life or the life of any snakebite victim:

1. Keep calm and kill the snake if you can.
2. Apply a tourniquet to prevent spread of poison into circulatory system.
3. By making an incision at the point of bite, remove as much blood by suction as possible.
4. Counteract the venom by injecting antivenom.

Do nothing which will speed up blood circulation; alcohol stimulates circulation. Get a physician as soon as possible; meanwhile make sure that the tourniquet is loosened every few minutes to allow some blood flow. Failure to do this may result in gangrene. If your work or your vacation is apt to expose you to poisonous snakes, carry a good antivenom kit. Above all, when you are in snake territory, be alert for snakes.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

Conducted by WIN DONAT

SCHOOL'S OUT! This is the cry all over the land when the balmy days of June roll around. In North Carolina, as in many other states, hundreds of thousands of youngsters will head back to the cities, towns and farms for a vacation. While some of the time will be spent on farm work, many a happy hour will be day-dreamed away on one of the thousands of farm ponds or the public streams and lakes with which we are so singularly blessed. Yes, fishing will come into its own every time a youngster wets a line, whether a worm, minnow, or even one of the pretty artificials be used. It is at this point that those of us in the conservation education job want to propose a rallying cry for the veteran fisherman. We suggest "Take A Youngster Fishing." How many of you club members, parents, fishermen, and, above all, sportsmen, will take us up on that? Even then, taking a youngster fishing is not the ultimate—teach him how. Proper casting technique is somewhat of an art which is learned quicker under supervised practice. Skish is a casting game at which groups can play. City lakes are natural sites for a children's fishing rodeo. The intricacies of fishing tackle are a fascinating lore not to be learned catch-as-catch-can, but under the kindly guidance of a friend. Oh, it can be learned without messing up your sacred afternoon off by taking a lively cricket of a boy along, but we are asking you to invest this time in future citizens, not only your youngster! We believe that the dividends paid you, either as parent or friend, are the stuff a good life is made of.

Along this line, as many of the clubs will suspend meetings during the summer, we want to remind you that your club will probably have the opportunity to send some boy and girl to the Wildlife Conservation Camp at Camp Millstone again this year. Last year many youngsters failed to go because there was no club meeting to choose delegates or to finance the trip. We suggest you prepare for this activity now.

W. D.

Mr. Robert L. Jacobs of Winnabow, N. C., asks,

"Could you please advise me as to whom I should write about the killing of wild game such as deer, and the size shot which I am to use?

"If you are the one this is my problem: My gun is Browning Auto, 30" barrel, full choke. I have tried "OO" and "O" and it spreads them too much to be of any value. I can only use No. 1 buckshot or No. 2 shot which will hold together for over 50 or 60 yards.

"I can put anywhere from 8 to 10 No. 2 shot at 50 yards and 6 to 8 No. 1 buckshot. I figure these are the largest shot I can use for hunting deer. I have had the game warden of this district to say it was against the law to use No. 2 shot, which is a BB shot.

"I would like a correct ruling on what I am to use. If you can send me a copy of the laws or inform me to whom I should write, I should greatly appreciate it. No one likes to keep within the law better than I do. Thanking you for a reply in the near future, I remain,"

Robert L. Jacobs

The writer has a real problem but it is not hopeless. There are several approaches to the answer, and the first seems to be always to use the largest shot on the larger animals and in this case it would be No. 1 bucks. In no instance should a gun be deliberately loaded with No. 2 bird shot for use on deer. Next, I suggest that the gun be patterned for rifled slugs as I have seldom seen a gun that would not keep this load in a 12" circle at 60 to 75 yards. Finally, the gun barrel could be corrected by the addition of one of the popular choke devices to the muzzle. It is quite possible that the adjustable features of these devices would permit the more efficient handling of larger bucks than No. 1. If the last word is wanted, a new barrel can be ordered from the manufacturer to the purchaser's specifications as to the size shot it must handle efficiently.

The following letter from Mr. Clyde E. Gooch of Salisbury, N. C., deserves publication:

"I notice from the Wildlife publication the interest and plans being manifested in field trials. I hope they can be had this Spring before the weather gets too warm. It is a fine undertaking.

"I am primarily interested in bird dogs and have to cut my admiration for the rest of the breeds in short in the interest of time and expense. It is hoped that your committee will develop specifications or standards for the bird dogs so that the public may know the type of dog being sought. In the past I have had interest in and have

participated in field trials. It is disheartening not to know the type and quality of dog that is sought to be placed. Many judges are biased against, and other judges are for, setters. It seems to me they should be looking for the best dog irrespective of whether he has short or long hair. It should not be too difficult to describe the type of shooting dog the trial is determined to find or discover. Again some judges will not place a dog that trails, while others will not place one that does not trail and wind. It seems to me that it should be stated whether or not a dog, to be judged, should be steadied to wing and shot, or only as to wing as is the usual standard in shooting dog stakes. It is next to impossible to have a shooting dog that is steady to wing and shot when he has hunted with dogs or friends at various times during the season. Then, too, you may lose so many cripples.

"The purpose of this letter is to congratulate your Commission and the committee appointed to conduct the trials. I wish each good sailing and good hunting."

The principal comment we would like to make on the above letter is that the Commission's interest in field trials lies only in the effort to use this one activity, with others such as the habitat restoration program and better law enforcement, to name two, as a means to further sportsmanship and better relations between sportsmen in our state. In agreement, we hope that the highly specialized and sometimes prejudiced trials will be avoided unless there is sufficient justification for such and then only after the conditions are already set forth and advertised.

Mr. Grady Hayes of Lumberton, N. C., asks, "How long would a salt water fish live in a bait box filled with sea water? I mean a large box which would hold 50 pounds of fish?"

This question is not clear as to the conditions under which the fish is being kept. Generally speaking, all fish require that water conditions be as near natural as possible whether fresh or salt water species are concerned. If it is a large fish and is to be kept in an aquarium, then the volume of water and the change-over must be adequate. This is because of the oxygen requirements of the individual fish. Next the fish must have an adequate and suitable supply of food. If the fish in question is to be kept in a wire or open box where the water flow can circulate through it, the food supply becomes the bigger question and the adequacy must be determined by the requirements of the fish.

The following letter from Mr. John Harding, Route 2, Mocksville, N. C., is one of many we receive:

"In Davie we have two things that hurt our game. In my neighborhood we have packs of hounds and curs that hunt by themselves during the raising season. They seem to hunt for nests of young rabbits especially. I counted 16 dogs in one pack last year.

"Another thing we have a law [in Davie County. ED.] that anyone can use a gun to hunt foxes anytime in the year. That would not be so bad if they shot nothing but foxes. So-called fox hunters shoot quail and squirrel all the year around."

By way of general information, we might point out that the 1951 General Assembly passed House Bill No. 198 which permits counties to establish a dog control program. This must be done by the county commissioners and if such programs could be established and effectively carried out, we believe that much game would be saved from self-hunting dogs. The second part of your letter refers to something which time alone can cure. We can point the way and help folks to become better sportsmen, but unless they desire to play the game fairly, progress is going to be mighty slow.

SPECIAL NOTICE

Dean A. Rosebery, Assistant Chief of Fish Division of the Virginia Commission of Game and Inland Fisheries, has appealed to Tarheel fishermen who fish in Currituck Sound and its tributaries, to cooperate with the Virginia Commission by returning any tags found on the upper jaw of bass caught in Currituck.

Many bass have been tagged in the Back Bay area of Virginia in an effort to collect data which can be used to improve bass fishing and it is believed that tagged fish may move into the North Carolina waters.

Here is a chance to cooperate with science at work. Keep and enjoy the fish, but send the tag and the date and place where caught as well as your name and address, to the Game Commission, Richmond, Va.

For Men Only

I saw her swimming in the brook,
A moment swift and fleeting,
And from the shock of that brief look,
My heart almost stopped beating.
I worked my way around the trees,
To where the view was clearer,
And then on trembling hands and knees
I edged a little nearer.
I never saw such perfect lines,
As she was there displaying
Beneath the shade of spreading pines,
In languid splendor playing.
Her twists and turns were full of grace,
Her body smoothly molded,
I know the joy showed on my face,
As each new charm unfolded.
And when she floated with the stream
The sight was most entrancing
Her wondrous body seemed to gleam,
From sunbeams, softly glancing.
I yearned for her with heart and soul,
And then I fell to wishing,
For I had neither hook nor pole,
And trout are caught by fishing.

—South Dakota *Conservation Digest*

• CONTINUED FROM PAGE 9 •

modate state championship shoots are planned. A long term lease on the land is being negotiated for the protection of the club's interests. The land is being managed for quail and rabbits and seven bird dog trial courses are being developed. When a fishing rodeo for youngsters, an outing for the members, crow hunting contest and perhaps the start of a club house become accomplished facts this year, it will be another in a series of bright feathers in the club's cap.

Busy, yes, but satisfying to all who take part. We salute the interest and energy not only of the Durham Club members but all the clubs whose efforts are a genuine contribution to our wildlife conservation program.

TRY ANGLING FOR BULLFROGS

Photo by Jack Dermid

Bullfrogs go for flies, small lures, or a piece of red flannel on a hook. Stalking and accurate casting are required, but the return in sport is great. This frog took a silver minnow.

Answers to . . .

PHOTO QUIZ

1. Blue jay. 2. Pokeberry. 3. White-footed or deer mouse. 4. Dogwood. 5. Bobcat. 6. Spreading adder or hog-nosed snake. 7. Walker hounds. 8. Mallard drake. 9. Sycamore. 10. Flying squirrel.

Photos by Jack Dermid

Bill Kinsey, wildlife patrolman, checks raccoons being loaded for shipment.

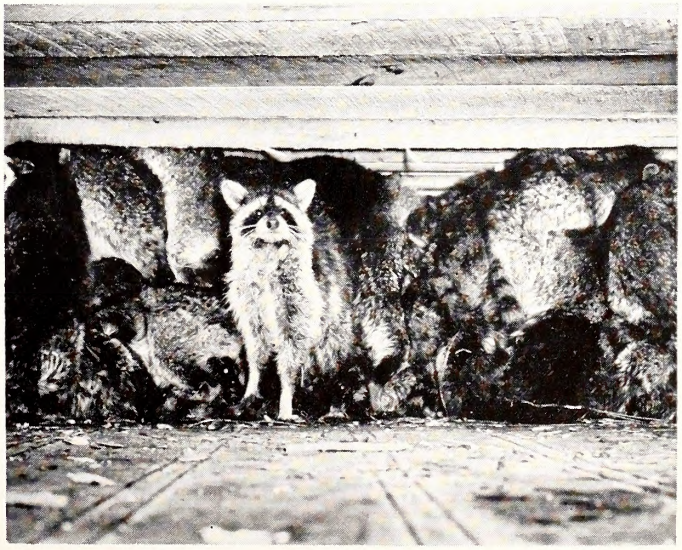
Raccoon Transplanting Program

During the 1950-51 season, 964 raccoons were trapped and redistributed in North Carolina. This makes the second year the Commission's transplanting program has been in operation. Last year 507 coons were relocated.

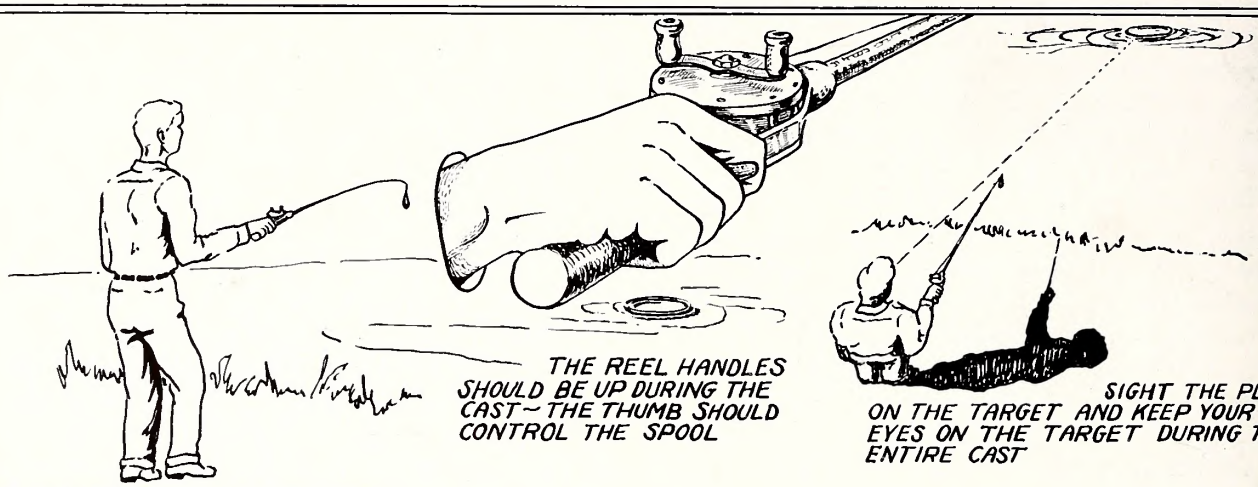
The raccoons were live trapped in certain eastern counties where a high population has resulted in considerable crop damage. They were released in areas of raccoon scarcity in western counties in an effort to provide better hunting.

The coon trapping program is a cooperative undertaking. Half of the five dollar fee paid to local trappers per animal is paid by participating sportsmen and half is paid by the Wildlife Resources Commission.

Fifty raccoons in a pickup truck, but only one is not camera shy.



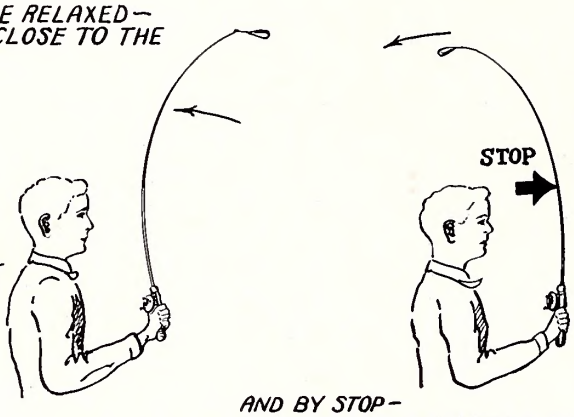
PLUGGING IS FUN AND EASY



THE BODY SHOULD BE RELAXED— THE CASTING ARM CLOSE TO THE SIDE

THE REEL HANDLES SHOULD BE UP DURING THE CAST—THE THUMB SHOULD CONTROL THE SPOOL

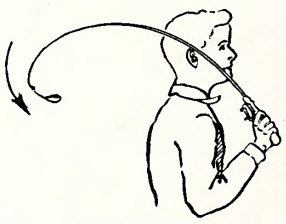
SIGHT THE PLUG ON THE TARGET AND KEEP YOUR EYES ON THE TARGET DURING THE ENTIRE CAST



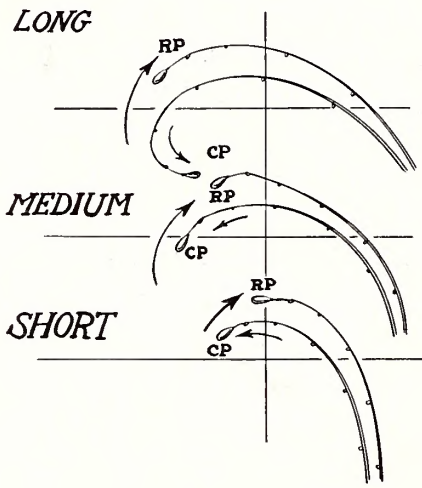
THE ROD IS LIKE THE BOW IN ARCHERY - IT IS COCKED BY RAISING THE TIP UPWARD IN A QUICK SMOOTH MOVEMENT

AND BY STOPPING IT ABRUPTLY WHEN IT REACHES THE VERTICAL POSITION

THE MOMENTUM CARRIES THE PLUG BACK AND COCKS THE ROD - REMEMBER THE WRIST AND THE ROD DO MOST OF THE WORK



FROM HERE ON THE THUMB PLAYS A MOST IMPORTANT PART IN THE CAST— IT RELEASES THE POWER IN THE ROD TO THE PLUG

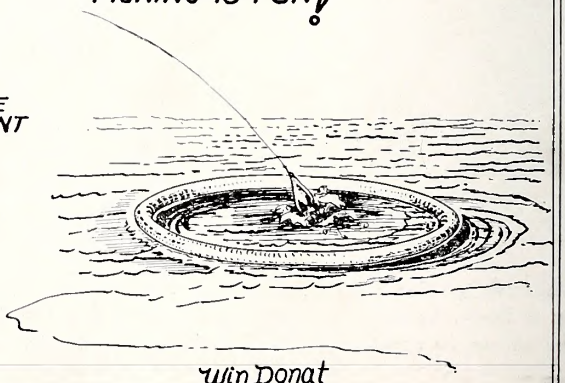


THE COCKED POSITIONS AND RELEASE POINTS ARE SHOWN FOR THREE CASTS — THE PLUG IS RELEASED BY LIFTING THE THUMB FROM THE REEL

TOUCH THE SPOOL LIGHTLY WITH THE THUMB WHILE THE PLUG IS IN FLIGHT TO PREVENT BACKLASHES

WHEN PROPERLY DONE THE BACKCAST IS FASTER THAN THE FORWARD MOTION

PRACTICE - PRACTICE - PRACTICE IN THE YARD AND EVERY TIME YOU GO FISHING - SHOOT FOR A MARK EVERY CAST - FISHING IS FUN!



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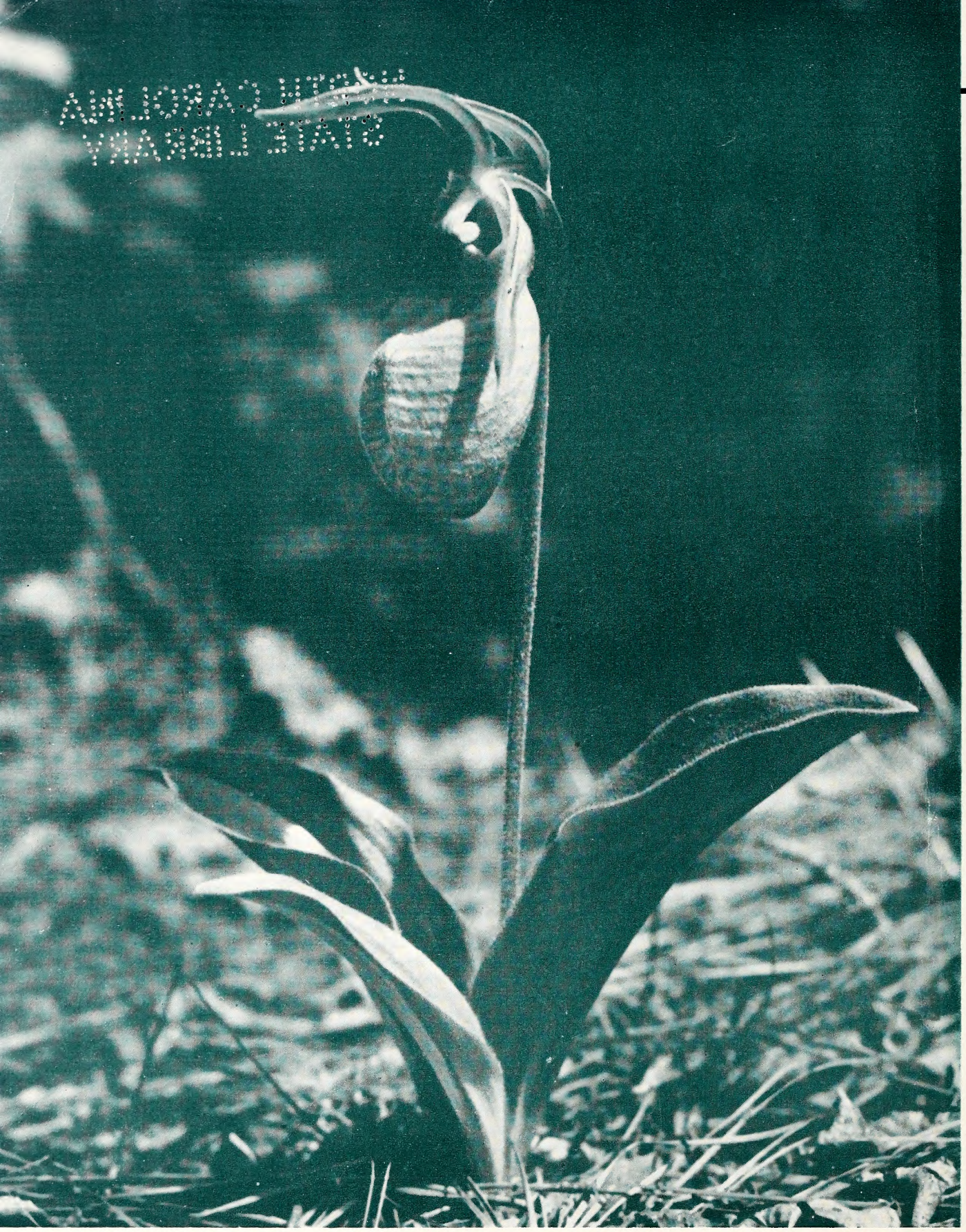

Photo by Jack Dermid

Pink Lady Slipper

Wildflowers are a conspicuous and beautiful part of the outdoors. From the pale purple Hepaticas of early spring to the brilliant goldenrods of late summer, they move as a parade of color across the land. Indeed, the sportsman who treads among wildflowers and fails to see them is not reaping a full share of his outdoor heritage.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

W. KERR SCOTT
Governor

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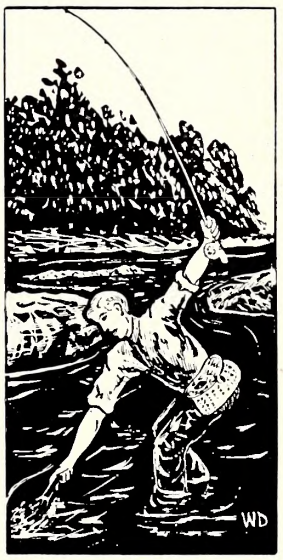

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JULY, 1951 **VOL. XV, NO. 7**

Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Win Donat ..... *Art Editor*
Marty Mabry ..... *Circulation*

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COVER

With the red, white, and blue colors of July in mind, Win Donat portrays a pair of indigo buntings in a setting of scarlet sage. The male is shown in flight.

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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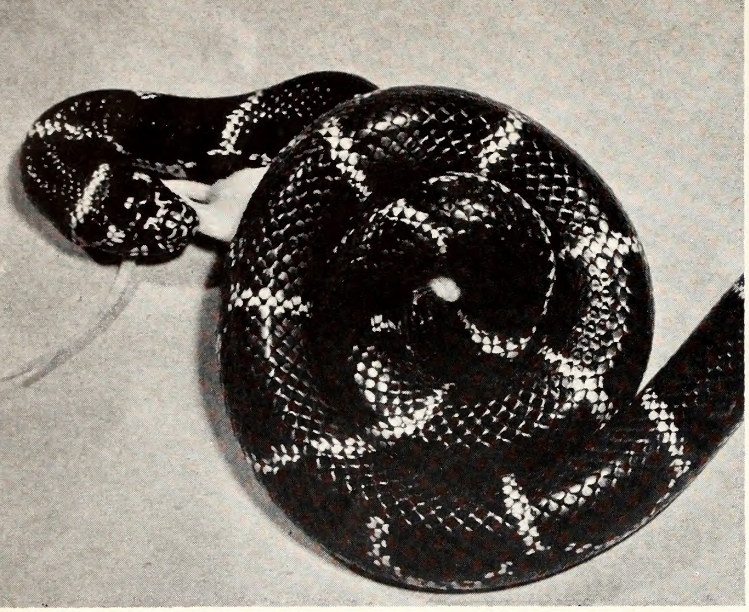
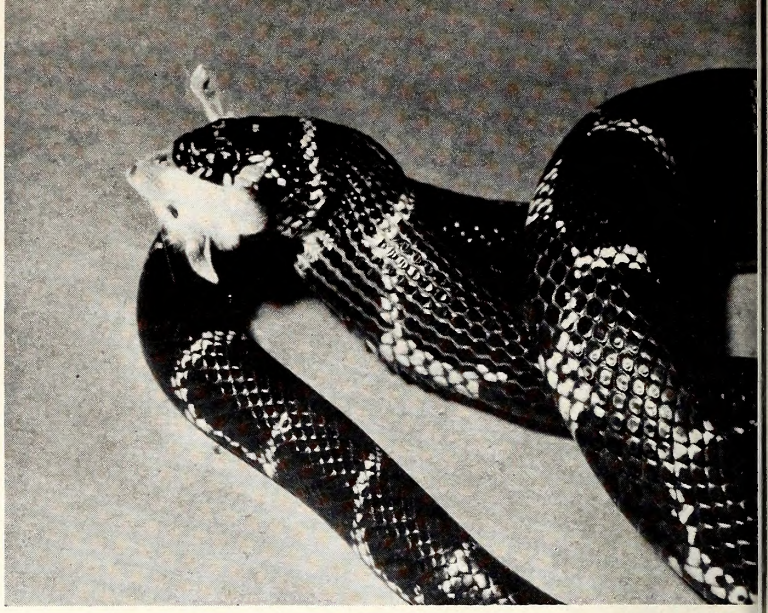


This common king snake is a pet at the N. C. State Museum. When offered a live white mouse for food, the snake grabs it with its mouth, quickly throws several coils about it to squeeze it to death, and then proceeds to swallow it whole.



Although the photo shows the king snake swallowing the mouse tail first, snakes almost invariably swallow their victims head first. The king snake has earned a good reputation for itself, for it occasionally kills and devours poisonous snakes.

LET'S LEARN *About Our Wildlife*

The Thirtieth of a Series on The Wildlife Species of North Carolina

North Carolina's Non-Poisonou

ALTHOUGH NON-POISONOUS SNAKES are not equipped with fangs and poison glands, they are well qualified to take care of themselves. They can and do bite. They coil themselves up in the manner of the rattlesnake and will strike if sufficiently annoyed. This fact has caused countless thousands of non-poisonous snakes to be killed in the belief that they were poisonous and thus dangerous.

HISTORY

Like their venomous relatives, non-venomous snakes have appeared in literature and folklore for thousands of years. No mention is made in the Bible as to whether the Serpent of Eden was poisonous. In Greek mythology appears a huge python (non-venomous) which rose from the mud after the Deluge and was finally slain by Apollo. For centuries naturalists have been obtaining factual data on snakes, while imaginative laymen have manufactured myths.

CHARACTERISTICS

Although non-poisonous snakes lack the hypodermic needle fangs of poisonous species, they can inflict painful wounds by biting. Their teeth are extremely short, but are sharp as needles and capable of inflicting a deep skin abrasion. Apparently the saliva of non-poisonous snakes retards blood clotting, and wounds from their small teeth tend to bleed profusely. Only the larger species can inflict anything like a serious wound, and even in these the greatest danger lies in the possibility of secondary infection.

Dentition and lack of poison sacs are the chief difference between non-poisonous and venomous snakes. There are no non-poisonous snakes with rattles, and only a few, such as certain water snakes, have the narrow neck and triangular heads of the vipers.

Color patterns are as varied as the species. There may be stripes, bands, blotches, or solid colors in the case of blacksnakes and blue racers. Colors may range from dull black or gray to the brilliant pattern of the milk snake.

Many non-poisonous species, such as the common garter snake, have anal glands which produce a putrid-smelling fluid that serves very well as a defense mechanism. Large species such as the king snake kill their prey by coiling around it and killing it by constriction. Others feed by simply capturing their prey and devouring it alive.

BREEDING HABITS

Many people believe that all poisonous snakes bear live young and that non-poisonous species lay eggs. This

is entirely false, since both types lay eggs or bear live young, depending on the species.

Information on the family life of snakes is far from complete. Snakes are normally solitary creatures except when they congregate in dens to hibernate or pair off to mate. In several species, such as the garter snake and water snake, definite courtship behavior has been observed. Mating occurs in the early spring, and the gestation period varies among species. Usually egg-laying snakes deposit their eggs several days or weeks before young-bearing snakes give birth to their young. It should be pointed out that *all* snakes produce eggs. The difference is simply that in the case of young-bearing species the eggs hatch inside the mother snake's body, while others deposit their eggs and leave them to hatch.

Either eggs or newborn young are almost invariably left to themselves. Eggs are deposited in a wide variety of situations. Some may be placed under a rotted log or in the decayed vegetation on the forest floor. Others may be laid in a shallow excavation in cultivated soil and covered over. Farmers frequently plow them up with farm machinery.

Eggs vary in size and number with the species. They may be as round as ping pong balls, or in elongate capsule form. The covering or shell is rather soft and pliable, similar in texture to turtle eggs.

nakes

By Rod Amundson
Photos By Jack Dermid

FOOD HABITS

The food habits of non-poisonous snakes determine whether they are to be condoned or condemned. Snakes are especially fond of birds' eggs of any kind, and thus become the enemy of the quail hunter and the waterfowler. Their ability to climb trees makes the eggs of songbirds vulnerable, and there will be no hesitation to the taking of fledglings.

An interesting anecdote occurred in Texas with regard to large bullsnakes which had found a henhouse to be a never-ending source of eggs. The snakes entered the hencoop through a small knothole, and were able to escape the same way as long as they did not fill themselves too full of food. Like the fabled wolf who ate so much sausage he could not leave the smokehouse by the small hole through which he entered, the appetite of these bullsnakes was their downfall. The farmer put several glass nesteggs in the hens' nests. One after another on succeeding instances, the snakes swallowed the glass eggs. It was impossible for them to crush this object, and it distended their bodies to the point where they could no longer go through the knothole.

In the waterfowl nesting grounds of the Midwest and Canada, bullsnakes destroy thousands of duck eggs and ducklings. On a number of its refuges, the Fish and Wildlife Service has found it necessary to build snake traps to cut down on waterfowl predation.

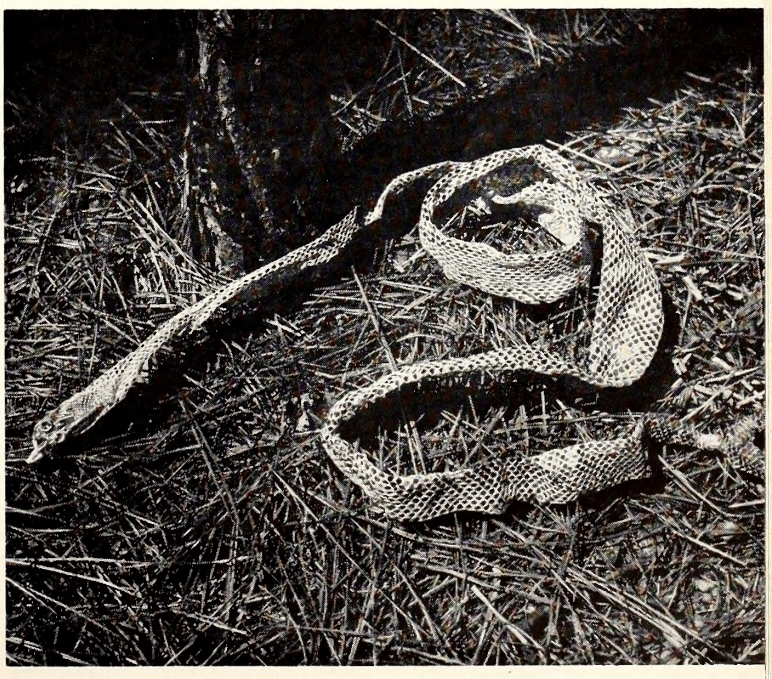
In addition to eggs, snakes feed on almost any kind of animal life that is small enough to swallow. Frogs are a favored item, as are lizards, snails, a variety of insects, and very often other snakes. Snakes have been known to drink milk set out for the family housecat, but it is extremely doubtful, if not downright impossible, that they ever suck cows. This phenomenon has been reported time after time, however, but few people would expect even the most docile jersey to stand still while a mouthful of needle-sharp teeth ground away at tender mammary tissue.

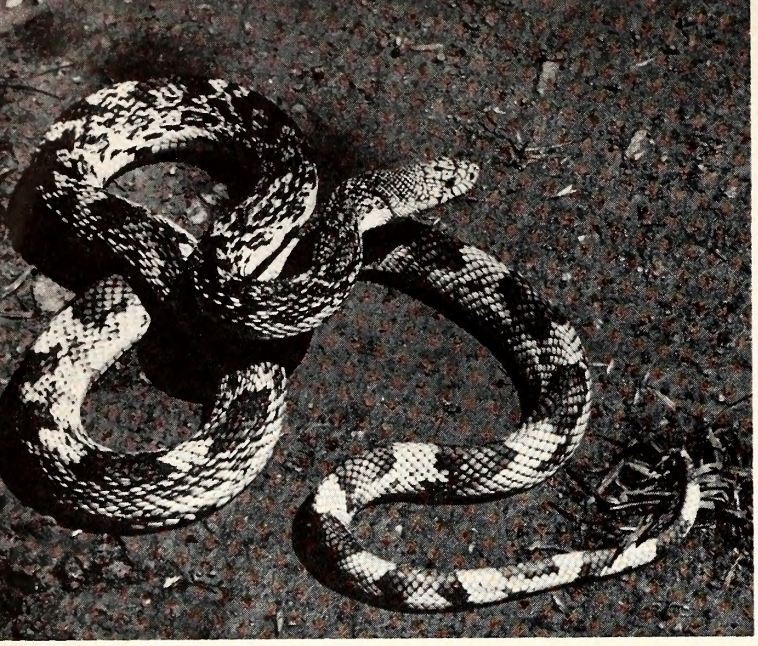
Water snakes are especially fond of fish, and where they frequent fish hatcheries, it is necessary to destroy them by any possible means, usually with a blast of shotgun pellets.

Snakes can swallow items of food of surprising size in proportion to the apparent size of their mouth. Nature has provided snakes with the ability to disjoint their lower jaw so that a bullsnake with a head less than an inch wide can swallow a large duck egg with apparent ease. In swallowing a duck egg, the bullsnake first gives it a thorough application of saliva, then starts at the narrower end of the egg and maneuvers it about until it goes into the throat. This can be accomplished, incidentally, while the brooding duck is sitting on the nest!

Anyone who has tried to break a hen's egg by squeezing it between the palms of the hands knows that the shell is practically indestructible. Thus one might wonder how a snake can crush an egg after it has been swallowed. Apparently the eggshell is forced against the vertebrae so that pressure on one side cracks the shell.

Not a ghost snake, but a shed skin. At regular intervals during the feeding season, snakes literally "crawl out of their skins."





The pine snake is a common species of the Sandhills. It is whitish with a series of large dark blotches down its back. It hisses loudly when disturbed.

Most snakes require considerable amounts of water, and drink by sucking it into their mouths much in the way horses drink.

ECONOMIC VALUE

Because of their food habits, it would be difficult to decide whether non-venomous snakes should be protected or destroyed. They feed on uncounted numbers of field mice, and are thus beneficial to farmers. At the same time, they rob quail and songbird nests. Most farmers are glad to have a few king snakes or pine snakes about the premises to keep down mice. An outdoorsman who finds a snake robbing a quail nest will not hesitate to kill it with the nearest weapon at hand.

No one would advocate a wholesale campaign against non-poisonous snakes, and such a campaign would be difficult to accomplish, since snakes are not easy to find. Apparently snakes fill an important place in the balance of nature, and their preservation or control resolves itself to a matter of individual choice. Certainly snakes which are not poisonous and feed almost entirely on insects and other vermin should be protected. Every small boy knows that snakes are valuable items to scare little girls with.

THE COMMON KING SNAKE

King snakes are among the most common snakes of the pine woods sections of North Carolina. They are somewhat nocturnal in habit, but are frequently seen basking in the sun. They are found somewhere near a pond or a stream of water, and will readily take to water to escape capture. The average size is about 40 inches for adults, but specimens five feet long have been taken.

When come upon suddenly, a king snake is apt to coil, buzz the end of his tail, and may strike if molested. If picked up, it is likely to coil itself around its captor's arms and demonstrate its remarkable constricting powers. King snakes feed largely on other snakes and seem to prefer venomous species, being immune to the venom. For this reason they are considered valuable.

The eggs are capsule-shaped and deposited in moist debris about ten in number.

THE PINE SNAKE

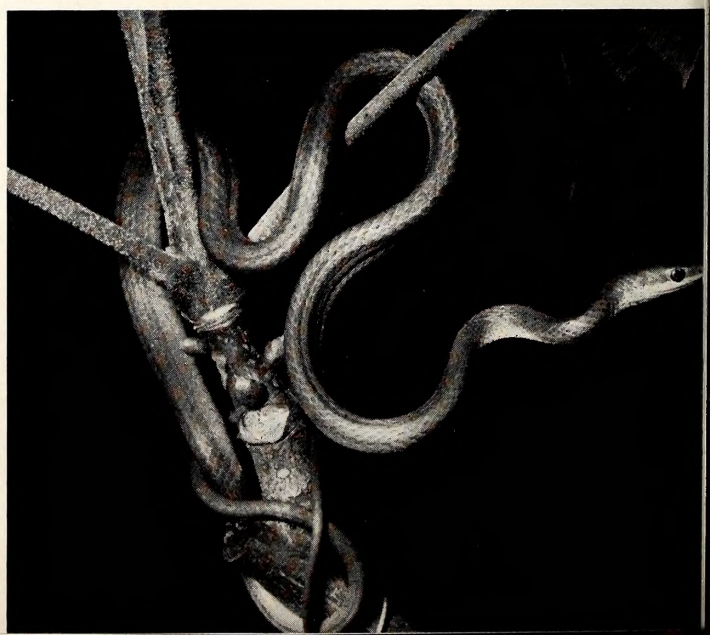
This is another rather large snake, frequently found in the sandy pine woodlands. Adults average five feet in length and the largest recorded was a 78-inch specimen. Although not much is known of their food habits, they are large enough to eat small rabbits, squirrels, cotton rats, and other rodents. They will eat eggs, and probably take small birds. The pine snake, like most others, prefers to run away from danger, but if cornered or come upon suddenly, will put up a considerable front. He will coil and strike repeatedly, and can hiss loudly enough to frighten the more timid snake hunter. An observer in Florida once saw a large pine snake battle two full grown raccoons. The battle lasted more than an hour with the snake escaping unharmed and the coons getting off with bloody noses.

An egg-laying species, the pine snake buries her eggs in loose, sandy soil, as much as eight inches deep. From 7 to 12 capsule-shaped eggs 2½ inches long are laid.

THE GARTER SNAKE

Garter snakes are by far the most numerous and widely distributed group in the country. In general they are more numerous west of Mississippi, but the common garter snake — the one found in North Carolina — is present in all other states. Garter snakes are long and slender with tapering tails. They are closely related to water snakes, but are more terrestial in habit than water snakes. Their outstanding characteristic is the series of long stripes which run the entire length of the body from the head to the tail. They are apt to be the first snakes seen in the spring and the last to go into hiding in the fall. Because they live near water as a general rule, their diet includes frogs, salamanders and toads. They are fond of earthworms and feed on them where worms are abundant. Garter snakes are almost altogether harmless and though they feed on frogs and toads, are considered beneficial.

The rough green snake is very slender, long, and delicate. It climbs through low trees and bushes with remarkable ease in search of insect prey.



The blacksnake is uniformly black above and beneath except for a white chin and throat. Note the extended tongue, an organ which aids snakes in smelling and feeling.

To disprove the theory that all non-venomous snakes lay eggs, garter snakes give birth to from a dozen to forty seven-inch young.

THE GREEN SNAKES

The rough green is a very slender, long, delicate snake that spends much of its time in trees in search of the insects that comprise almost 100 per cent of its diet. Adults average about 28 inches in length, and large specimens may reach a length of 3½ feet. It is a gentle snake by nature, but will attempt to bite if molested sufficiently. The color is a uniform light green above with whitish or yellowish under parts. The scales are heavily keeled (over-lapping).

The eggs are about an inch long and a half inch thick with a rather hard shell. Clutches of eggs vary from four to nine or ten, with six the usual number.

The smooth green snake is smaller than the rough species, and it is less arboreal in habit. It is an extremely gentle snake that habituates meadows, clearings, and marshes. It climbs shrubbery and small trees with a great deal of ease, and it too is a completely harmless feeder on insects. Adults average about 15 inches in length. Three to 11 small eggs are laid in the middle or late summer, and hatch in late August or early September. Because of their green color and secretive habit, smooth green snakes are probably more numerous than is apparent. Their color makes them difficult to see in green vegetation.

THE HOG-NOSED SNAKE

Despite its reputation for blowing poisonous spray on its victims, the hog-nosed or spreading adder (also called puff adder, blowsnake) is one of the most harmless and docile of snakes. It is doubtful that one has ever been induced to bite.

The hog-nosed snake is a master of the art of bluffing. When approached—if he cannot escape—he will coil up like a viper, spread the bones along his neck, open his mouth wide and set up a terrific hissing. Should this performance fail to frighten his assailant, he will roll over on his back and play "possum" with convincing effect. Pick up a hog-nosed snake when he is thus pretending to be dead, and set him down in an upright position. He will immediately turn over on his back, letting his tongue loll out one side of his gaping mouth. Once convinced that he is not to be harmed, he will become quite docile and friendly. Hog-nosed snakes make excellent pets, and will feed on a variety of mice, frogs, lizards, and insects. One specimen observed by the writer greedily drank water and ate a large grasshopper fifteen minutes after he was placed in a cage.

Hog-nosed snakes are characterized by the shovel-like, upturned snout. They are a rather thick bodied snake seldom more than two feet long. The markings are somewhat similar to those of the rattlesnake, and this fact may add to the fear that these utterly harmless snakes inspire in the uninitiated.

THE BLACKSNAKE

Blacksnakes are part of a group of snakes called "racers" because of the speed with which they can get over the ground. Adults average about four feet long, and are uniformly black from nose to the long, whip-like tail.

Blacksnakes feed on a variety of small life, such as frogs, toads, lizards, snakes, birds, mice, and insects. They climb trees with considerable ease, and thus are able to rob the nests of songbirds and take the young birds.

Blacksnakes lay up to 25 eggs in a clutch concealed in decaying vegetation. The young are ten to twelve inches long.

WATER SNAKES

Water snakes compose a large group of snakes in the genus *Natrix* which are widely distributed throughout the country. The most abundant water snake in North Carolina is the banded water snake. It is a rather

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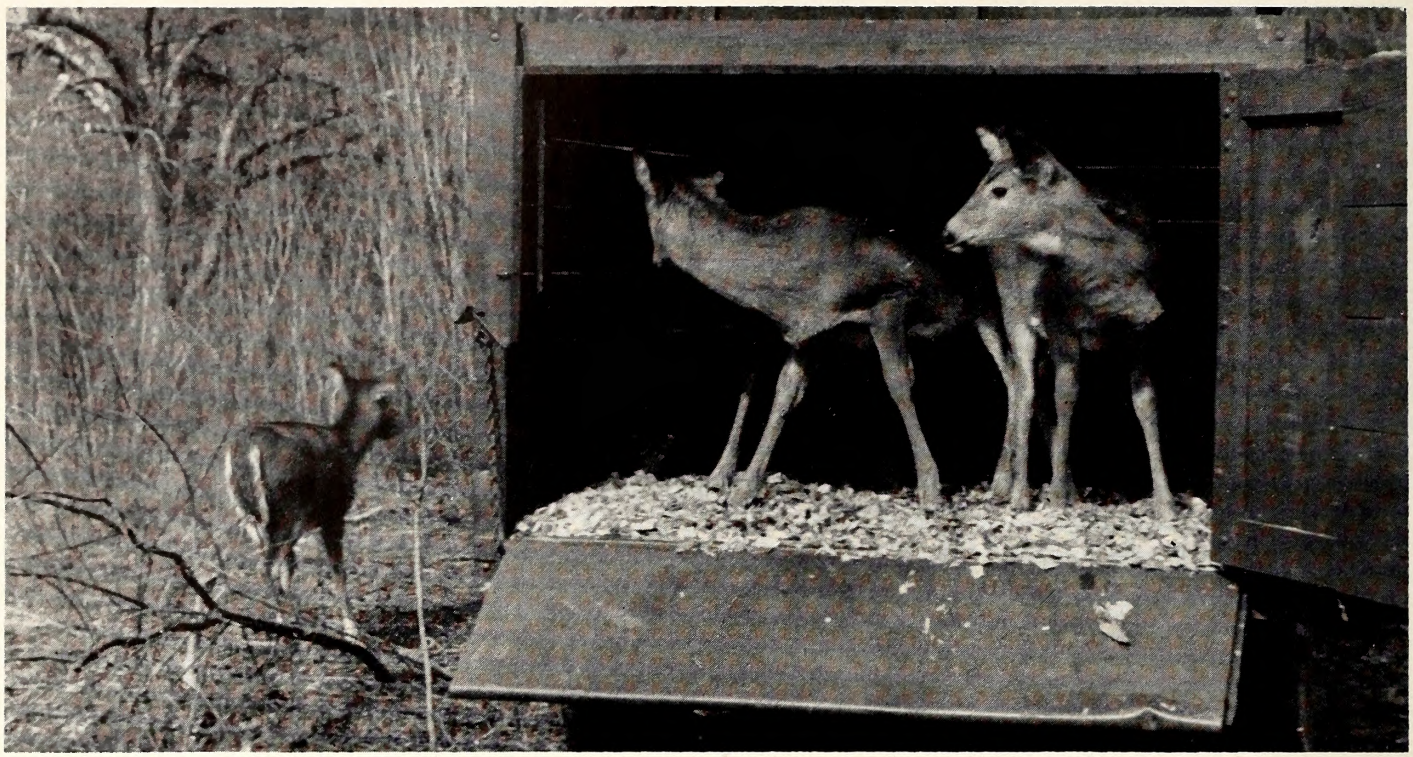
Water snakes are ugly, pugnacious, and ill-tempered, but non-poisonous. They are common along streams and lakes, where they are frequently confused with the dangerous cottonmouth.



One hundred and twenty-five deer were released on three new refuge areas during the 1950-51 season. This photo shows deer being released on the Lake Lure refuge.

Progress Report On

BIG GAME RESTORATION

by FRANK B. BARICK
Game Management Specialist

Photos by the Author

This article is of special interest to deer hunters and conservationists. It tells what the Wildlife Commission is doing to produce a larger and better distributed deer herd in North Carolina.

THE BIG GAME RESTORATION PROGRAM made substantial forward progress during the 1950-51 season with the stocking of 125 deer on three new refuges. As pointed out in an earlier article, October 1950, Commission regulation requires that stocking be confined to bona fide refuge areas with posted and painted boundary lines and with protection from predators and poachers. This regulation was made to insure the success of each restocking effort since earlier stocking on unprotected areas had proven to be ineffective.

The three areas stocked this year meet with these refuge requirements and promise to yield a good return in huntable deer at the end of the preliminary five-year protection period. (All re-stocked areas are closed to hunting for a minimum of five years to allow the stock to multiply.)

Lake Lure Refuge

Stocking was completed on the Lake Lure refuge which lies mostly in Rutherford County. Stocking was started on this area in 1946 with the liberation of 18 deer. Late in 1949 work was started on establishing a painted and posted refuge boundary in line with the new Commission regulation and three more deer were liberated. The boundary line work was completed in 1950 and three deputy game protectors were assigned to the area. With the liberation of 47 more deer during the past season, stocking is considered completed for this area.

Several features combine to insure the success of this refuge. Foremost among these is the fact that the boundary line is painted and posted against hunting and the fact that it is virtually surrounded by resident game

protectors. Another very important feature is the stray dog control ordinance which has been passed and enforced by the people of the Town of Lake Lure. With the elimination of the stray dog problem the deer will have an opportunity to raise fawns unmolested. In the event a stray dog should get into the refuge undetected, and proceed to molest the deer, the Lake is at hand to provide sanctuary until the culprit can be apprehended.

The abundant and varied food supply, ranging from recently cut over timber land to abandoned farm land and open fields, insure an adequate food supply which in turn will allow maximum fawn production. (It has been scientifically demonstrated that fawn production is greatest when food conditions are best.)

Still another feature contributing to the welfare of the new deer herd is the large size of the refuge. Originally planned to include about 10,000 acres, the boundaries have been extended on the north and south to include nearly 15,000 acres. This is a very important feature because deer normally wander over a route, or home range, of several hundred acres, and the more such home ranges we can have the larger the deer population before it will start to overflow into the surrounding territory.

It might be well to point out that the purpose of this project is not to confine the results of restocking to within refuge area boundaries but rather to use these areas as centers of distribution from which the game will spread out into the surrounding territory. The larger the refuge the larger the brood stock and the larger the number of deer produced to range out and take up in the adjoining area.

Hanging Rock State Park Stocked

The second refuge stocked this year was the Hanging Rock State Park in Stokes County, at the request of the local wildlife club. This was really a dual purpose stocking. Since this park receives many visitors during the summer months it was hoped that the addition of a few deer would add further to its attractiveness and to the enjoyment of the people. Although the park, or refuge proper, is only about 4,000 acres, it is surrounded by an additional area of forest land which brings the total immediate habitat to over 8,000 acres.

Provided that dogs are kept under control and poaching prevented, this stocking of 15 deer could conceivably double in size next spring. Six of the 15 deer were bred adult does and there is a good possibility that some of the five doe fawns may have been bred too. One of the bucks was an adult, and the other three were fawns. All four of the bucks will be of breeding age next fall.

Another feature of this release was somewhat in the nature of an experiment to see if the time has come when stocking can be undertaken in the scattered woodlot land use pattern characteristic of the piedmont section of the state. To date, nearly all of our deer are found only in the more remote forested portions of the eastern coastal plain and mountainous west. We have a tremendous expanse of potential big game range in the central one-third of our state which is awaiting only the tolerance of the people to be developed.

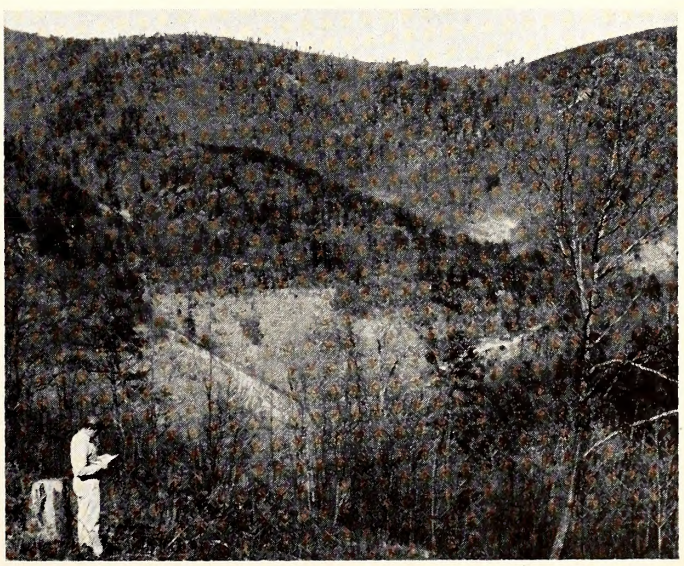
Sizeable deer herds are found in similarly populated sections of states to the north — Pennsylvania, New York, Massachusetts, and Vermont to name a few. We too could have deer in our farming sections if we would but keep our dogs up, limit our hunting to the hunting season, and stay within regulations. It will probably take a few more years of education but we in the Commission are looking forward to the day when the man from Charlotte, or Greensboro, or Winston-Salem will not have to travel between one-hundred and three-hundred miles to kill a fine trophy buck.

If this Hanging Rock park stocking is successful, and if it does result in the establishment of deer in the outlying farm and forest land, then the way will be clear to make additional releases in other sections of the piedmont.

Little Grandfather Mountain Wildlife Management Area

The third, and probably our most important release, was made in Wilkes county. The most significant feature of this release area, and therein lies its importance, is the fact that it is the first of a series of big game refuges being bought by the Commission under its new program of land acquisition. A 6,000 acre tract of land is in the process of being purchased adjacent to the 6,000 acre Doughton Park of the Blue Ridge Parkway. A formal agreement for cooperative wildlife management on Doughton Park combines to make this a 12,000-acre refuge area.

Acquisition work was started on this area last fall and when a sufficient amount of the proposed tract was secured by option so that its ultimate establishment was assured, a full time protector was appointed to the



Many abandoned farms and an abundant growth of shrubs and young trees make the Little Grandfather Mountain refuge ideal deer range.

area. The first duty of the protector was to post a temporary boundary around the tract and the next step was to stock it with deer. A total of 62 deer was released on this area, 29 from Wisconsin and 33 from three of our western refuges where the population was sufficiently large so that the removal of a few would not adversely affect the hunting.

Development plans for this area, called the Little Grandfather Mountain Wildlife Management area, call for establishing permanent pastures for the deer, plus plantings of lespedeza and multiflora rose for birds. As soon as stock becomes available, wild turkeys will be released in the area, and suitable plantings of chufa, millet, and other food species made. The many small coves, several of which have abandoned farm land, are especially well suited for development as game habitat. The dense underbrush covering most of the area which resulted from logging and fire will serve as an excellent supply of browse for several years into the future. Another interesting feature of this area is the several fine trout streams starting in its upper elevations. With proper development and protection these too can be improved in productive capacity.

The program of land acquisition for game restoration is expected to go forward apace as more areas become available. It is planned to confine purchases to the central and eastern parts of the state since the National Forest land in the mountainous far west will provide a sufficient number of opportunities for expansion without purchase. Several other areas are already under consideration for acquisition and development.

Deer for Restocking Secured both Locally and from Out of State

Many will undoubtedly want to have the facts on the source of deer used for restocking. A few have expressed concern over trapping deer from our established refuge areas. To answer these questions, a complete summary of all the deer secured, both by purchase from out of state and by trapping locally, is presented in tabular form.

It will be noted from these figures that nearly half of the 125 deer released were purchased from out of state. Seventeen of these were bucks (8 adults and 19 fawns) and 32 were does (16 adult and 16 fawn). These deer cost $120 per head, as compared to a cost of $68 per head for those trapped locally.

The 66 trapped deer were taken from three different refuges, and the largest number removed from any one was only 31. Thus, compared to the total number of deer present on the trapping area this was literally

• CONTINUED ON PAGE 22 •

Summary of Deer Purchase, Trapping and Transplanting, 1950-51

Source	*No. of each sex and age*	*Average wt. of each sex and age*	*Release Area* — *At Trap*	*Hanging Rock*	*Lake Lure*	*Little Grandfather*
BENT CREEK						
Trapped 15	7 |	89 |	|		7 |	|
Transferred 14	2 | 6	39 | 45	| 1		1 | 5	1 |
MT. MITCHELL						
Trapped 47*	14* | 9	82 | 94#	| 7		5 | 2	8 |
Transferred 31	11 | 13	38 | 39	| 8		9 | 3	2 | 2
DANIEL BOONE						
Trapped 21	13 |	84 |			|	13 |
Transferred 21	2 | 6	38 | 54			1 |	1 | 6
WISCONSIN						
Bought 60*	17* | 8	109 | 112		6 | 1	2 | 1	8 | 6
Transferred 59	16 | 19	57 | 74		5 | 3	5 | 6	6 | 10
TOTALS		(three areas) (native only)				
Trapped 143*	51 | 17	84 | 94#	| 7	6 | 1	14 | 3	29 | 6
Transferred 125	31 | 44	38 | 44	| 9	5 | 3	16 | 14	10 | 18
RELEASED TOTALS			16	15	47	63

* one died

\# includes several estimated weights

KEY: adult doe \| adult buck / fawn doe \| fawn buck

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Essay Contest Winners Announced

Bobby Cooper, a student at Central High School in Elizabeth City, won $100.00 in cash and a free trip to the annual meeting of the N. C. Wildlife Federation in Asheville next October for writing the best essay in the state on the subject: "The Value of Wildlife to Me and My Community."

Second place and $60.00 in cash was won by Malcolm R. Williamson, Jr., Waynesville High School, Waynesville, and third place, with a $40.00 cash prize, goes to Zoella Martin, Elkin High School, Elkin. Mary Jeane Brown, Red Oak High School, Buncombe County, and Billy Edwards, Spencer High School, Spencer, won honorable mention.

The essay contest was sponsored jointly by the N. C. Wildlife Federation and the Wildlife Resources Commission. Cash awards were made available by Federation officials, and will be presented to the three first place winners at the Asheville meeting. Prizes for school, county, and district winners were arranged for by local wildlife clubs, and include free trips to the Asheville meeting for the first and second prize winners in each district. Wildlife and Federation officials consider the contest, the first of its kind ever held in North Carolina, to be an outstanding success, and are already laying plans for a similar contest next year. This year's contest was open to all Tar Heel high school students.

* * * *

Commission To Expand Warm Water Fisheries Program

The Wildlife Resources Commission is making plans for expanding its program of warm water fish management. Executive Director Patton said that an all-out effort is to be made to intensify and expand warm water game fish management practices. Adjustments have been made in the Commission's budget to give more attention toward the improvement of the sport enjoyed by hundreds of thousands of fishermen in the eastern part of the state. Patton indicated that a tremendous problem is involved in managing the state's 2,500,000 acres of water, most of which lies east of Raleigh. The improvement of fishing on this vast scale will require the wholehearted cooperation of thousands of sport fishermen.

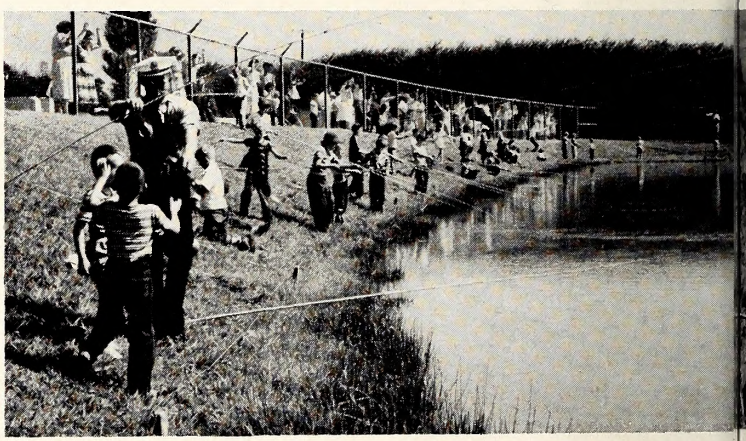
The improvement of warm water fishing will be accomplished without throttling any other phase of the Commission's program partly through the use of Dingell-Johnson (federal) funds.

* * * *

1951-1952 Hunting Regulations will be printed and placed in the hands of license dealers throughout the state by August 1 when hunting licenses and combination hunting and fishing licenses go on sale. The Wildlife Resources Commission met on June 12 to set the final rules after hearing the opinions of sportsmen at a series of nine public hearings, one in each of the nine Commission Districts. Enough copies of the rules will be printed to give every hunting license buyer an opportunity to receive a copy.

Kid's F

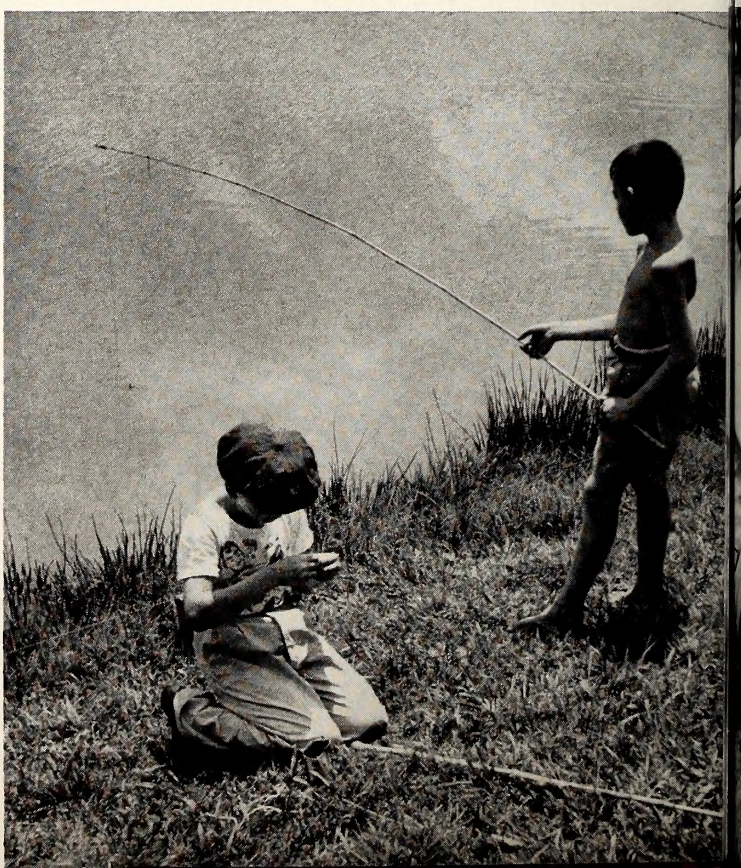
The combination of summertime, kids, and fishing can c
rodeo under the sponsorship of Better Fishing Incorpora
tackle are awarded to boys and girls catching the heavie
caught, and the longest fish. Enthusiasm is great and co
day in Wilson and in other North Carolina cities when



The rodeo in full swing. Each kid was required to do his own fishing with a single hook and line. Firemen were on hand to lend assistance when serious difficulties were encountered.

Before the zero hour, entries were briefed on the contest rules over a loud speaker. Adults shown came to lend the youngsters moral support. They had fun, too!

Besides being fun, fishing was serious business. Prestige as well as grand prizes were at stake. Intent eyes watched bobbing floats, and adept hands quickly baited hooks.



"Hmm. Are you sure your scales are right." When the limit of ten fish were caught, the youngsters rushed to the judges' corner to have them weighed and measured.

ng Rodeo

N! Each summer the Town of Wilson holds a big fishing
nal non-profit organization. Prizes consisting of fishing
allest fish, the heaviest string of ten fish, the first fish
keen among the several hundred participants. It is a big
rodeo is held.

Using shrimp, this young fellow had trouble baiting his hook; but perseverance won, and he proudly carted home a string of fish.

The girl entries did not have time to act squeamishly over a wiggling earthworm, for the rodeo had a time limit. Neither did the boys offer them assistance.

The fish pond is well stocked with many species of fish, and is opened each summer only for the rodeo. This youngster hopes his catfish will win the prize for the longest fish.

Two fishermen check out with their string of ten. The fishing rodeo proved to the adult spectators that kids love to fish. MORAL: Take a kid fishing!

Den Trees for Squirrels and Raccoons

• NO. 18 OF A SERIES OF PROJECTS FOR SPORTSMEN'S ASSOCIATIONS

By The Virginia Commission of Game and Inland Fisheries

DEN TREES ARE DISAPPEARING from our woodlands just as are our bee trees and other natural homes for wildlife. If we hope to have a continued population of squirrels and raccoons we, as sportsmen and woodland owners, must do something to rectify this situation.

Hollow trees for squirrels are desirable although they can live without them; for raccoons they are almost a necessity. What is happening to our den trees? In this era of high prices, timber operations have reached a peak never before attained. Our den trees are being removed at record speed; the hunter with his ax and saw accounts for many den trees. In addition many den trees are destroyed due to routine lumber operations.

How are these people who are the controlling factors in our squirrel and raccoon population to be reached? This can only be done by educating them to the part that they must play in maintaining these animals' populations and in bringing them back in sections where habitat has been destroyed.

It was found in a Michigan study that two den trees per 15-20 acres with 4-6 potential den trees in the same area will maintain a good raccoon population. The fact that it requires 75-100 years for a den tree to grow and the hollow to form should give some indication as to the importance of protecting our existing and potential den trees if raccoon hunting is always to be with us. During the study, den trees were found to average 21 inches in diameter and were within a quarter of a mile of a permanent water supply. Such trees should be given primary consideration when marking timber.

In the case of hunters, encouraging clubs for sport hunting instead of hide hunting may save many den trees. Meeting of game technicians with coon hunters in discussion on raccoon management will help sell the hunter on the preservation of his own sport.

The person who actually determines whether den trees are to be left during a lumbering operation is the landowner. The landowner should stipulate in his timber sale contract that no den trees are to be removed; the sawmill operator should instruct his cutters not to "fell" a den tree and to exercise care in cutting a nearby tree so as not to "hang" another tree in a den tree thereby closing the opening.

Much is being done today to encourage landowners to have the timber cut selectively; that is, cut only the mature trees. The usual practice is to have a forester mark and scale the trees to be removed. These foresters can do much to assure a future supply of den trees by being especially careful to leave at least two den trees per every 15-20 acres and by encouraging land owners to insist that sawmill operator follow the plan.

The development of den trees for raccoon den sites is not too difficult a task. A thump with an ax will reveal a possible den site which can be opened with a saw or an ax. (Opening of 6″ x 6″ will be sufficient.) Most dens in the Michigan study were from 20 to 40 feet above the ground so any artificial openings should be placed somewhere within these distances.

Raccoon and squirrel hunting have always been popular sports throughout the state and their future in certain sections is almost entirely dependent on the practices mentioned above. Let all those interested in these grand sports give serious thought to saving what den trees we now have and in providing more openings in the hollow limbs and trees now present in our woods.

Two mammals new to Great Smoky Mountains National Park, Tennessee-North Carolina, were found late in 1950 in the Tennessee section of the park at an elevation of 3,700 feet. One was the water shrew, the other the long-tailed shrew. Both were captured on the same night and less than 50 feet apart. Neither of these small mammals had been found previously south of West Virginia.

"JOE BEAVER" By Ed Nofziger

Forest Service, U. S. Department of Agriculture

"Well thank you so much! I have lots more floor space since you put my living room on the horizontal!"

Sittin' and Readin'

by **Bill Hamnett**
Wildlife Education Representative

THE PAST SEVERAL ISSUES of *Wildlife* have carried a project in BACK-YARD CONSERVATION which we hope you have enjoyed working with.

The days are hot now and the cool refreshment of evening hours are a relief. While you are relaxing on your front porch or sitting in the back yard, near bird houses, bath and shrubbery (previous projects suggested), thinking about what you have done and looking forward to the pleasure of autumn and hunting, pick up an interesting book and read what others like you have done. Our lack of experiences can be quickly offset by using the information and advice others have gained. All books are interesting and many are more popular than others, but the suggestion here is to become more familiar with literature of the natural world. If you are a hunter, fisherman, sportsman or a nature lover these books will help you have a better insight of the forces which are continually at work for and against the animals and plants we enjoy and endeavor to perpetuate.

It is difficult to present the title of only one book and have it completely cover the interest of natural history or realm of the wild. So, several styles of writing and ideas are presented from which you may choose those of greatest interest.

To be introduced to the minute details of close observation by others who have looked beyond the surface into the feelings, desires and habits of wild creatures one should read some of the writings of John Burroughs, Henry Thoreau and Ernest Thompson Seton. There are others, but these three were among the first to bring the out-of-doors into our homes and truly saw "sermons in stones and books in running brooks."

The different fields of natural science are well recorded by many excellent writers. And it is only possible here to mention that in each group — soils, forests, insects, plants, fish, animals, etc. — there are many writers to choose from.

Your interest may be well founded and you would like to use guides to help you to become more familiar with individual species. The Putnam series of Nature Field Books will do much to broaden your horizon. The Audubon and Peterson's *Field Guide to Birds* will enable you to know all the birds about you or wherever you may travel about the country.

As a citizen of the world working toward the goal of peace and understanding you should also read something of universal scope. *Road To Survival,* by William Voigt, dealing with the explosive question of human population in relation to the supply of natural resources is one of the best current books in circulation.

It would be unfair not to mention the possibility of good reading in the field of wildlife conservation. As a sportsman you are not really satisfied unless you contribute something in return for the reward you have earned from the field or stream. The principles of management and development of sound wildlife programs all over the country have been encouraged by the writing of Leopold in his book *Game Management.*

Now the question is ready to come up "Where can I get such books as have been mentioned?" Most people live in or near a town which has a library. If these libraries do not have copies of the type of reading material you desire they will get it for you or tell you how you may obtain the books you desire. The bookmobile in your county will serve you right to your door if you desire their cooperation.

This summer plan to take trips and experiences and find new friends through reading books of the natural world and God's handiwork.

Fishermen who visit the North Carolina coast in spring or fall will find it a good idea to bring along more than one kind of rod. An overlapping of seasons provides an opportunity for variety with boat, surf, bait, or fly rod. Along the famed Outer Banks, there are places where you can cast into the surf, and within a few minutes be plugging for largemouth bass in fresh waters.

The New Hanover Fishing Club in North Carolina has the largest membership of any fishing club in the world.

"It's a dog's nature to chase an' kill . . . ," says Cyrus Littlebee, who adds that ". . . you can't get sore at a dog for chasin' deer or killin' rabbits or 'possums, when they ain't nobody around to keep him from it . . . it all points to the man as owns the dogs, an' what he lets 'em do." W. O. Nagel from *Missouri Conservationist.*

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Wildlife Resources Commission
Raleigh, North Carolina

Gentlemen:

Why not stock trout in the Fall instead of in the Spring?

Yours truly,

Joe Doaks

Dear Joe,

A lot of people have been asking that question recently. Too many, in fact, when you consider that the answer was definitely and scientifically determined right here in North Carolina just ten years ago. Of course, a whole new crop of trout fishermen has developed since 1941, and it is likely that many of them never heard of the Pisgah study and its results.

It seems reasonable, at first thought, that if all the streams were stocked as soon as the fishing season closed for the year, there would be a fine crop of wild and hungry trout ready for the fishermen when the next season opened. Unfortunately, it just doesn't work out that way, as was shown by the five-year intensive study on the Pisgah forest streams.

In the past there were various methods tried by the interested states in their efforts to improve their trout fishing. Some stocked the streams in the fall with three or four inch fish and depended on nature to get them up to seven or eight inches by the following spring. Some raised them to the seven inch size in the hatcheries and planted them just before and during the fishing season. Others held them in the hatcheries for a year and a half and planted them in the fall for the following season.

The planting of small fingerlings in the fall proved to be of benefit only in those streams where there were not enough spawning sites to permit natural reproduction to restock the streams. In most streams the limiting factor was the supply of available food, and the addition of more small fish to compete for the inadequate amount of food did nothing to improve the supply of larger fish when the next fishing season arrived.

It was recognized that in heavily fished waters the take was improved by stocking just before and during the fishing season. That's reasonable! A trout stream is relatively small, has definite boundaries, and a definite food supply. It will raise a certain number of pounds of fish and no more. Just compare it with that fine pasture you have around your farm pond, Joe. It will carry about two dozen head of cattle in the summer; but if you wanted to take a hundred head out of that pasture, you would have to stock it with seventy-six more animals just before or during the time the hundred were being taken out. That is exactly the way much of our trout fishing has to be provided today.

Some of the boys have the erroneous belief that hatchery fish are fat and lazy, and generally undesirable. They believe that by stocking the streams *after* the fishing season, the hatchery fish would look and act and taste just like native fish by the time the next fishing season came around. Without a doubt it is true that they would be just like native fish. And now we are back to your original question, Joe. Why not stock them in the fall?

Let's think about your pasture again, and about its food supply. It is like a trout stream in that it provides a lot more food in the summer than in the winter. You know you can carry two dozen head of cattle on your pasture in the spring and summer and fall. But how about winter, Joe? How many head can you carry through January and February and March without having them lose weight or actually be in danger of starving? If you wanted to take a hundred head out of that pasture the next summer, would you put them all in there in the fall and expect them to live? Neither can the trout!

The study on the Pisgah forest streams showed the disadvantage of fall stocking very conclusively. The fish were marked to show the time they were stocked, and a complete creel census showed the extent of their recovery by the fishermen. In 1937 and 1938 over thirteen thousand rainbow trout, averaging six and one-half inches, were fall-stocked. None were stocked in the spring. During the period of the study, a total of 5.5 percent of the 1937 group was recovered, and 4.8 percent of the 1938 group. Think of that, Joe. Only about five fish caught from each hundred fish stocked. By 1940 and 1941 the stocking system had been changed

so that the fish were planted just before and during the fishing season. This spring stocking resulted in an average recovery of 60 percent for rainbow trout. The recovery from one group of spring-planted brook trout was as high as 83 percent.

That's the answer to your question, Joe. The raising of fish in a hatchery is not an end in itself, but only a means of providing more fish for more fishermen. It is a waste of time and money to raise fish and put them in the stream if they are not caught. When you compare returns of less than ten percent from fall-stocked fish against returns of better than sixty percent from spring-stocked fish, then it's just a question of dollars and cents — just a question of giving the sportsmen the most we can for their money, and that's what we are here for.

Best wishes,

Harry Cornell

• CONTINUED FROM PAGE 7 •

large, heavy bodied snake with a relatively widened head and narrow neck. It is always found in the vicinity of water and feeds on fish, frogs, toads, and even small turtles. Because it often resembles the cottonmouth in appearance, it is often thought to be poisonous. It is somewhat pugnacious in disposition, and at the same time may become curious enough to swim toward a boat to investigate it. The curiosity may give rise to tales of fishermen who claim to have been chased by water snakes. Usually, to make a better story, the fisherman claims that the snake which chased him was a cottonmouth. Where the true cottonmouth is of a dark general color, the banded water snake has a series of reddish-brown or black bands running the full length of the body on a ground color of yellow, reddish, or brown.

The red-bellied water snake is a black or dark reddish-brown above, with a solid rusty-reddish color below. It more closely resembles the cottonmouth than the banded water snake does. Both give birth to live young anywhere from 8 to 27 in number.

SUMMARY

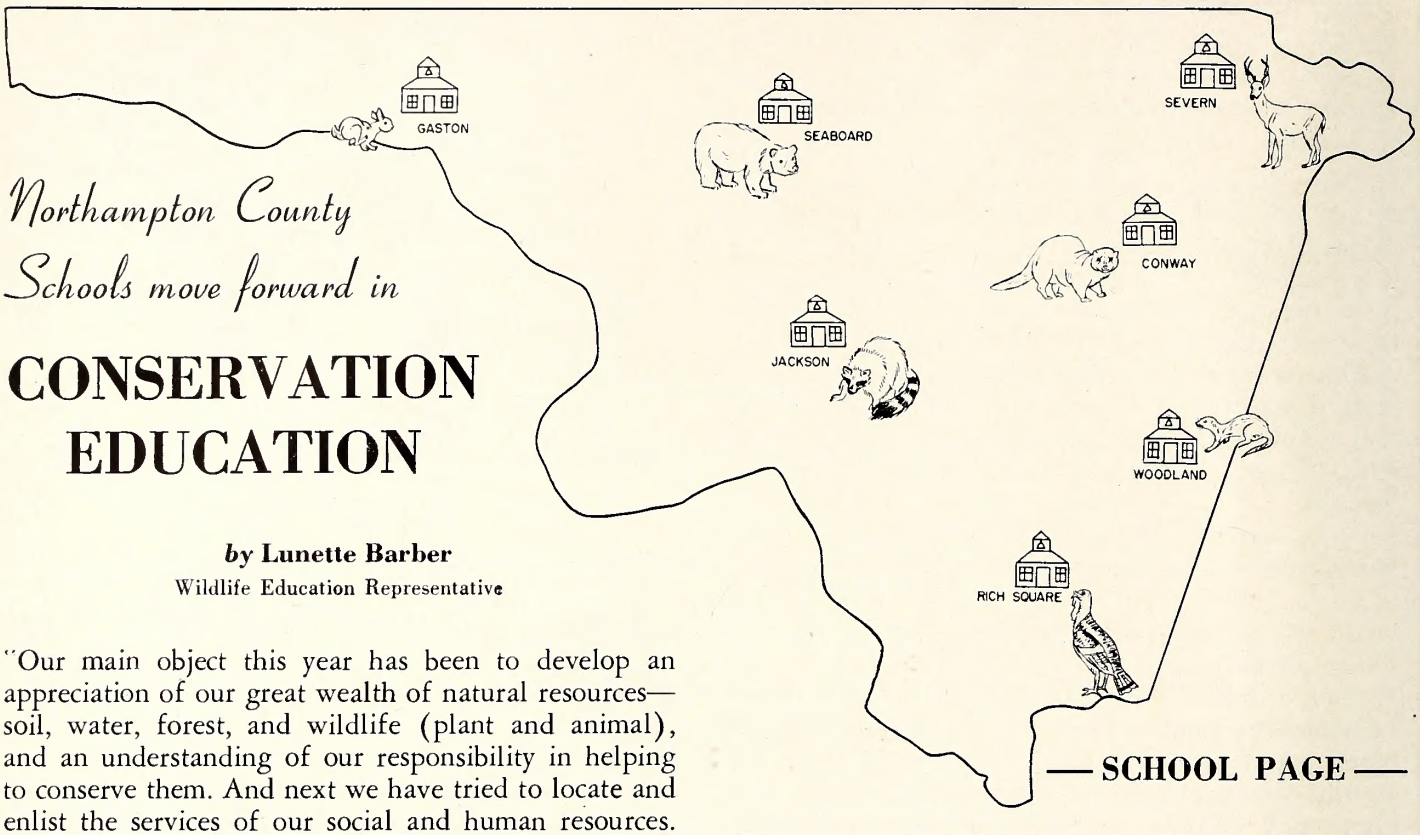
The above is far from a complete discussion of North Carolina's non-poisonous snakes. Only a few of the more important species have been discussed. There are many others of equal interest. Much of the material for this brief discussion was taken from *"Field Book of Snakes of the United States and Canada"* by Karl P. Schmidt and D. Dwight Davis (G. P. Putnam's Sons, New York). We have attempted to create a little more of an understanding of snakes. They are not to be feared or hated. Avoided, perhaps, but not wantonly destroyed. To the person interested in the study of snakes, the out-of-doors is a laboratory for observation, and any good library is a fertile source of printed material on these interesting creatures.

Lines to my Outdoor Man

by G. V. DeLAMARTER

I've often wondered why it is—
Each dreary workday morning
You turn a cross, indifferent ear
To our alarm's shrill warning . . .
But *wait* till hunting season starts—
At *dawn* you're gay and pleasant
As off you march with shells and gun
To bag a duck or pheasant!
And why it is—when spring rolls round
You get a sluggish fever—
Too tired to lift a window screen
But eager as a beaver
When someone mentions trout or bass
Or even going sailing . . .
You scrub the decks and shine the brass
As if your mind were failing!
You won't go visit relatives
(Their beds are *hard*, you've found)
Yet you sleep like a baby
In the woods—right on the ground!
I wouldn't change you for the world—
(I couldn't—and I know it—)
Because, my outdoor-loving male
With age, you'll soon outgrow it!

—Courtesy *Michigan Out-of-Doors.*



Northampton County Schools move forward in

CONSERVATION EDUCATION

by Lunette Barber
Wildlife Education Representative

— SCHOOL PAGE —

"Our main object this year has been to develop an appreciation of our great wealth of natural resources—soil, water, forest, and wildlife (plant and animal), and an understanding of our responsibility in helping to conserve them. And next we have tried to locate and enlist the services of our social and human resources. By enlisting their services we add so much interest and functional information which isn't found in the textbook." These remarks were made recently by Miss Mary Huff, supervisor of elementary schools in Northampton county.

Realizing that the county is a small North Carolina (even shaped similar with the topography comparable to the state) within our own state borders, we find that it has a great wealth of renewable natural resources at hand. With the approval of the County Superintendent, Mr. N. L. Turner, Miss Huff has attempted to emphasize a Resource-Use Education program in the elementary grades for the purpose of teaching conservation. Perhaps no other county in the state has had as many state, county, and local citizens to aid in the program as Northampton county. The following have visited the schools: soil conservationist, water resources engineer, district forester, county farm agent, and many local citizens.

The Wildlife Resources Commission has had several employees to aid in wildlife conservation study. The county game protector, the district game protector, the district biologist, and two representatives from the Education Division visited the schools. One representative lectured to the pupils in all the first eight grades in six of the schools and two high schools, attended one county-wide teachers' meeting and furnished material for wildlife study for all teachers who requested it. The other representative attended an NCEA meeting and showed the new film "Tar Heel Wildlife," and then left it for use in the schools. Later in the school year he went into some of the classrooms and showed kodachrome slides of birds of North Carolina and gave lectures with the slides. Several teachers used films from the Commission's library and collected material for future references.

What have the results been? Junior Wildlife clubs were formed in some of the schools and outstanding work was done in some of them; children became more familiar with their state and county agencies, and learned about the local citizens; much additional interest was created in science; many groups have visited the Rockfish Hatchery near Weldon, which is the only one of its kind in America; field trips have been taken for the purpose of studying soils, minerals, and fossils; a few grades toured the county with the intention of proving the facts they had learned about the county. On these tours, fossils, galax and mountain laurel were found. The most interesting result, and one of the best, is from the county librarian who said that requests for research material from pupils throughout the county have been numerous. That fact proves that the children are eager to know something beyond their textbooks and nothing is better news than to hear that our youth is reading worth-while books. Thanks to the teachers for promoting the interest and thanks for the rural library service!

Records of activities are usually kept on *paper* in *files,* but an additional way is done in Northampton county—Miss Huff is making kodachrome slides of Resource-Use activities in the county and plans to use them to help continue progress and interest in future programs.

Conservation of our natural resources is definitely going to be a *must* in the future because of the rapid

• CONTINUED ON PAGE 22 •

Notes from the field

Spawning Fish

ANYONE WHO IS INTERESTED IN FISH and their activities would do well to walk quietly to the edge of a sunlit pond and watch the antics of spawning fish. The usually sluggish crappie takes on the speed of trout during the spring to pursue any other fish from his untidy spawning area. The crappie very rarely constructs any sort of nest but rather picks out some sort of vegetation or brush on which to deposit the eggs. And any intruder from the tiniest minnow to the most ferocious bass is quickly attacked by either parent. The flashing speed of the chase is almost unbelievable and the crappie seems tireless in his vigilance. Although the crappie does not feed extensively while spawning and guarding the nest, they will attack artificial lures and are often easily taken by the angler. It might be well to add that the more crappies that can be taken from the nesting areas, the better.

Usually in the same general vicinity you will see circular nests about 14 inches in diameter in the shape of shallow bowls. Pick a day of bright sunlight and the adult fish will be easily seen hovering in the center of the nest. These are common sunfish, or in some cases, bluegills. The water may be only inches deep over the nests and the adults are easily frightened into deeper water. They will almost always return after being frightened away, but they are extremely shy toward objects outside the water. But like their crappie cousins, they will defend their young against all comers that swim.

Look a little further in water about three feet deep. Here nests slightly larger than the sunfish nests can be seen with one or two bluegills nearby. Notice the spines in the dorsal fin; usually they lie flat against the back, but let any intruders venture near, the needle-sharp spines stand up ready for battle. And the fish can use these tiny spears.—*Duane Raver, Fisheries Investigator.*

Giant Kidney Worm in North Carolina Mink

During the winter of 1949-50 while examining the carcasses of 166 mink at J. J. Flora's fur shed in Moyock, N. C., the right kidney of 33 specimens was found atrophied. Some were shrivelled the size of a marble but the majority were larger than the normal size mink kidney. Curious to find out what they contained, each was opened and the contents examined. To my amazement, one to two scarlet red worms, 6 to 15 inches long, appeared in each kidney. Animal pathology specialists at the Fish and Wildlife Service's Patuxent Research Refuge, Laurel, Maryland, and Dr. Frederick Barkalow, Jr. of North Carolina State College, Raleigh, North Carolina, identified the parasite as the giant kidney worm *(Dioctophyma renale).* Accordingly, the small worms were males, the large worms, females. Additional information obtained revealed an interesting but complicated story which follows: the giant kidney worm, among the largest known and destructive nematodes, has been found in the abdominal cavity, mammary gland and kidneys of the dog *(Canis familiaris),* coyote *(Canis latrans)* timber wolf *(Canis lupus),* red fox and related forms *(Vulpes fulva),* wolverine *(Gulo luscus),* mink *(Mustela vision)* and doubtless other forms of carnivora. Woodhead, University of Michigan, who worked out the complete life cycle, found that branchiobdellids which commonly live on crayfish serve as the first intermediate host. Bullheads eat the tiny animalcules, become infected, and then when eaten by the mink, it also becomes infected and subsequently loses its right kidney. Two years are required to complete the life cycle from egg to adults.

No one knows how long a mink with one kidney will live nor how many minks annually die when their remaining kidney becomes infected. Though common in Currituck county mink, two of six mink examined at Moyock in January, 1951, were infected. Parasitized animals have always appeared to be as healthy and of as fine quality fur as uninfected specimens. Maine mink ranchers have lost animals, however, from kidney worm infection. It may be, therefore, that losses among wild mink are heavier than anyone suspects.—*Ken Wilson, Fur Resources Biologist.*

References Cited

Myer, M. C. and Witter, J. F.: The Giant Kidney Worm In Mink in Maine, The Journal of the American Veterinary Medical Association, Vol. CXVI, No. 878, May 1950.

Woodhead, A. E.: The Life Cycle of the Giant Kidney Worm of Mammals. J. Parasitol., Suppl., 27, (1946): 35-36.

Big Catfish

While trolling in Hiwassee lake last May 5, H. Bueck, Superintendent of Murphy schools, and his son, H. C. Bueck, caught a 30 pound catfish. The 32 inch fish was caught on a shiner minnow plug and 12 pound test line. Forty minutes was required to land it.—*Arnold R. Dalrymple, Cherokee County Wildlife Protector.*

Quail Along Blue Ridge Parkway

Last March while driving eighteen miles of the Blue Ridge Parkway in Alleghany county, I saw six coveys of quail, ranging in number from six to fifteen birds each. The quail were feeding along the shoulder of the road where the snow had been cleared away. No hunting is permitted along the parkway, and the birds seemed somewhat tame. There is plenty of food and cover.—*Walter F. Edmisten, Wildlife Protection Supervisor.*

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

Conducted by Win Donat

THEY SAY THAT COMPETITION is the heart of business — that Americans are the best fed, housed and clothed of the earth's people — all because of free enterprise in business. If competition in business means so much to our living, why can't we get some of this competitive spirit in our sportsman's club activities?

We have visited many club outings in the past where a casting contest provided fun and friendly competition for members and guests. Why, we repeat, can't this competition be extended between clubs? The area comprising Charlotte, Gastonia, Statesville, and Albemarle is a natural for group visitations — another in the Chapel Hill, Durham, Raleigh, Sanford, and Smithfield area. These are only suggestions and many similar combinations are workable.

These contests need not be elaborate or expensive affairs, but they do need to be started. It is true that they affect only a few of our sportsmen, yet the shot in the arm that our clubs need is to be found in games and intermingling such as this. The equipment is simple—just your regular fishing outfit. Targets are standard and cheap and the rules formulated by the National Skish Association. Prizes are not necessary—one of the most satisfactory awards would be for the losers to buy the dinners for the winners.

The real value of these programs lies in the fraternization and the wider acquaintance promoted among sportsmen. Let us repeat a point we have tried to make on this page several times in the past. *This or any other program should not be closed to adult men alone.* The field of conservation, the benefits of outdoor recreation, and the club programs should be aimed at all people—men, women and children alike.

A casting program is only one step in building the spirit needed by our Federation. Shooting contests, field trials and sporting photography contests are additional activities which cement sportsmen into a living dynamic force.

W. D.

Mr. A. C. Davis of Greensboro, N. C., takes issue with the thoughts expressed in a letter published on this page in the May issue. Mr. Davis' letter follows:

"I have just read Mr. C. A. Brickhouse's letter printed in the magazine (May, 1951. Ed.) under the heading of "Get It Off Your Chest."

"I know what Mr. Brickhouse means and how he feels about the "One Gallus Sportsman," such as I am. Nevertheless, the simple buying of a hunting license does not give you the right to hunt on the 'other fellow's land' without his permission. On the other hand, in a free country (if we are still entitled to that distinction), people who have land for sale have the right to sell to whom they please—usually to the one who offers the most money for it. We buy a license to drive an automobile, but no one is under obligation to furnish us with an automobile. On the other hand, if one person wants to buy a Cadillac and the other fellow can't afford anything but a Ford, who can complain?

"I believe we would 'jump out of the frying pan into the fire' if the law permitted a person to hunt where he pleases —just because he has a hunting license."

As time goes on, the problem of diminishing free hunting areas becomes more acute. It is well to have a discussion of this and any other topic pertaining to subjects so vital to our hunting and fishing. Anyone can get in on it.

Mr. Leo Healer of Lubbock, Texas, writes about something which has been the subject of several similar requests:

"I have been subscribing to WILDLIFE IN NORTH CAROLINA only since July, 1950. During this time the magazine has been so fine I want to secure a complete file from the first issue forward. Of especial interest has been your series of articles on 'The Wildlife Species of North Carolina' and the fine art work on the covers.

"Will you please help me to secure a complete and permanent file of WILDLIFE IN NORTH CAROLINA by sending as many back issues as you have? I shall be happy to pay for them if there is a charge. This will be a big task for me, and I need your help.

"In the event you cannot supply all of the back issues needed, where would you suggest I start trying to locate the others?

"Thanking you for this service, and hoping to hear from you by return mail, I remain,"

We have had many requests for back issues of *Wildlife,* as well as requests for enlarged prints of the covers. We wish that it could be possible to meet these requests, but it is not. However, if by any chance we could be of service by acting as a clearing house for those who have duplicate copies of the magazine, yet are lacking other issues, we will try to help out.

Mr. L. D. Hipp, Greensboro, N. C., writes an interesting letter as follows:

"I have just received your notice of the expiration of my subscription to your paper, which I have been taking for the past two years. I am enclosing $1.00 for two more years. I enjoy getting this magazine very much. I hope that something can be done to get something more to hunt.

"I only killed three squirrels, 1 quail, no rabbits, for there are not many around here as the fox has gotten so plentiful that they eat up all rabbits.

"I, for one, would like to see some jack rabbits brought in here, to see if they can give the fox hunters enough chasing for the dogs and to take the place of the fox. Can't it be tried somewhere in North Carolina?

"I buy the combination license for hunting and fishing every year. I have only been fishing the past three years, as the hunting is played out around here. Please let's see if rabbits can't take the place of the fox.

"Hoping to get the May issue of the magazine, I am,"

We are not expressing an opinion on this letter, but are giving credit to the sincerity with which it was written. Don't you have some thoughts?

Wildlife Protector James H. Vinson of Winton, N. C., did not expect his letter to be published, but its contents indicate such a commendable activity that it is worthy of publication:

"I have shown the film "Tar Heel Wildlife" to between 3,500 and 4,000 school children and adults in Hertford County. It was highly complimented. I was somewhat surprised at the interest shown by the children.

"I am having requests for pamphlets on wildlife to be used in the school rooms. I have copies of "Our Wildlife and Its Wise Use," "Food and Game Fishes of North Carolina" by Willis King, "Food For Wildlife" by Eugene E. Schwall. I also am writing the U. S. Fish and Wildlife Service for "The Farmer and Wildlife" by Durwood L. Allen.

"Please advise me what you have available for this purpose. I have seven large schools and about ten smaller ones."

Our facilities do not permit the production of material on the scale that would permit distribution to every school child, even where our staff is doing the excellent work indicated above. We do have some project material for free distribution to group leaders. Primarily we want to congratulate Protector Vinson and all others who are carrying on similar programs.

The sting of a bee is located at the tail-end of the abdomen.

DEER AND DOGS

According to the most recent estimates made by wildlife protectors, there are approximately 52,000 deer in North Carolina.

The annual legal kill of deer in North Carolina is about 7,000 head. The annual kill by stray dogs is over 1,000 head!

Most of these illegal kills are in the spring and summer months when the does and fawns are most vulnerable to attack, and it is mostly does and fawns or does heavy with fawn which are killed.

In many parts of North Carolina, free-running uncontrolled stray dogs are the single most important deterrent to the maintenance and restoration of big game.

An ever-increasing horde of stray dogs annually takes a toll of over 1,000 breeding does and young fawns in North Carolina. This menace must be controlled if we are to preserve our game for the enjoyment of our people.

The control of stray dogs will work hardship on no one because they belong to no one.

Photo by Roland Giduz

"It was this big," says Ruth Logan, eight-year-old daughter of Orange County Wildlife Protector Robert Logan, as Mayor E. S. Lanier of Chapel Hill awards her the certificate of Junior Better Fishing Queen of North Carolina. Ruth won the award by landing an eight-inch crappie last summer in the Orange County Wildlife Club's fishing rodeo. Lanier made the presentation for Governor Scott.

Members of the Wildlife Resources Commission photographed at a recent meeting at Raleigh. *First row, left to right:* J. W. Moore of Hayesville, vice-chairman; Robert Sadler of Bayboro, chairman; and G. E. Beal of Red Oak, secretary. *Second row:* Clyde P. Patton, executive director; E. D. McGougan, Lumber Bridge; Thurman Briggs, Lexington; George W. Keesee, Gastonia; H. C. Kennett, Durham; R. Floyd Crouse, Sparta; and O. L. Woodhouse, Grandy.

• CONTINUED FROM PAGE 10 •

but "a drop in the bucket." Another precaution taken to insure a favorable residue of legal deer on the trapping areas was the sex ratio of deer removed. That is, mostly doe deer were taken, leaving the bucks for hunter harvest.

It should perhaps be explained that the Commission first establishes a trapping quota, or limit, to the number of animals that may be removed from any refuge, and further specifies that not more than one-fifth of the total number be buck deer. When the quota has been reached for either sex, further catches are released at the trap. During this past year 16 bucks in excess of the trapping quota were released at the trap.

Furthermore, horned bucks are not removed if the trapping starts before the hunting season, and when the trapping is after the hunting season, nothing larger than spike horns are removed from the trapping area. Although large bucks can be handled, they are poor risks since they become overly excited in the course of transfer. As a result the few male deer removed are usually fawns of the year. These are considered quite adequate since they are of breeding age by the time of the first breeding season on the new refuge.

At the present time project personnel are busy locating areas that can be set up as new refuges next fall and winter. If all goes according to plan, this should result in another two or three good areas on the way toward providing better hunting in the not too distant future. The overall, long term program calls for the restoration of big game populations in all portions of the state where they can compatibly survive with other land uses. With the help and cooperation of all the people, especially those who live near new refuge areas, we shall not be too long in arriving at our goal.

• CONTINUED FROM PAGE 18 •

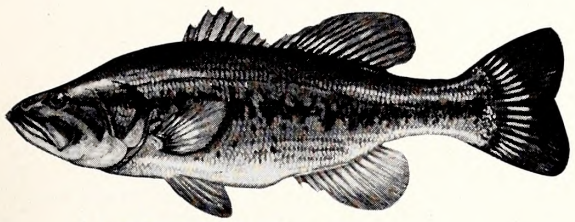
increase in population and the heavy demand for necessities and desired comforts and luxuries of the people, and the first step to its practice is through learning, and there is no better place to begin than with our youth in the schools. So Northampton county is beginning a most necessary program that will pay dividends in the future. No individual, state, or nation can lose anything by practicing conservation.

Striped Bass Hatchery

Fish Division personnel conducted the operation of the striped bass hatchery at Weldon this year between April 17 and May 18. River conditions were such that relatively large numbers of spawning fish appeared. Before the hatchery was closed, 3,689,000 fry were stocked, showing a marked increase over the 1950 total of 1,668,000 fry. Distribution was made according to a predetermined stocking list of twenty eastern North Carolina rivers, and was carried out by interested sportsmen under the immediate supervision of wildlife protectors.

SOME NORTH CAROLINA GAME FISH

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION



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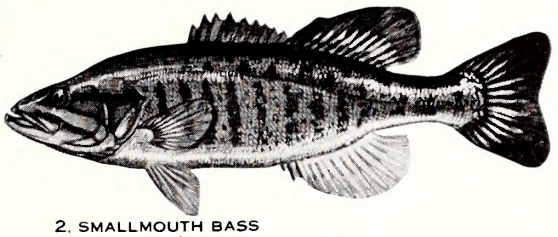

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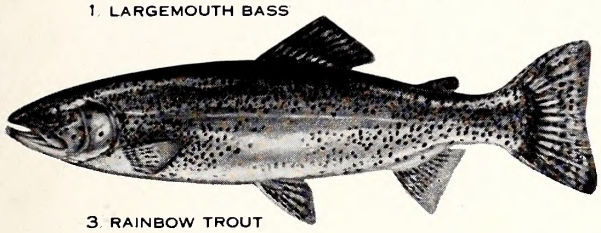

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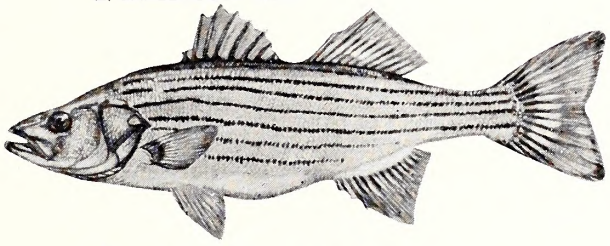
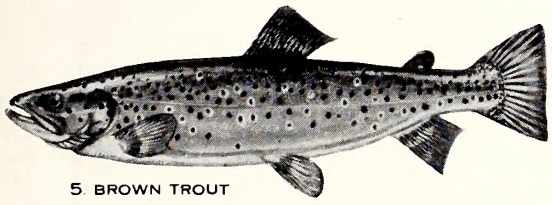
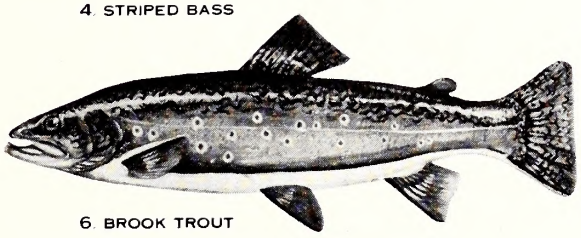


4. STRIPED BASS



5. BROOK TROUT



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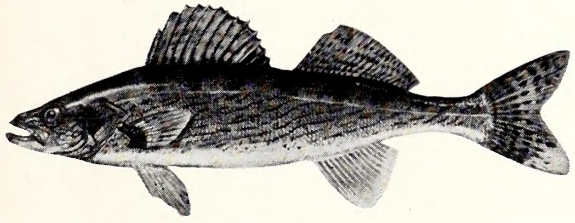

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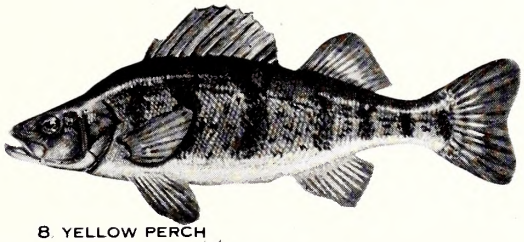

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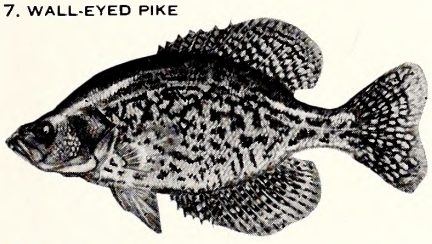
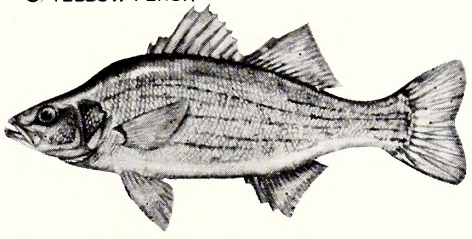


9. BLACK CRAPPIE



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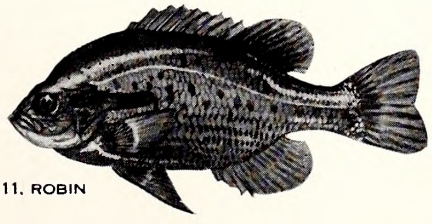
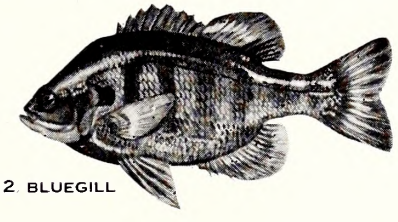


11. ROBIN



12. BLUEGILL

HELP PROVIDE BETTER FISHING FOR MORE PEOPLE

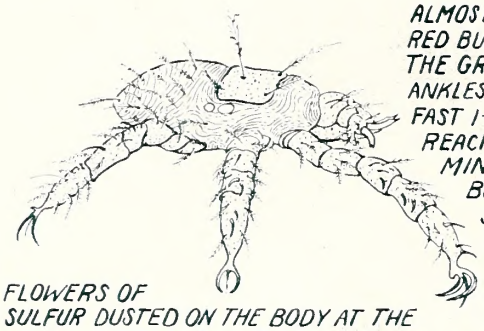
1. Cooperate In Fish Management Practices.
2. Obey Fishing Regulations.
3. Fish For Fun And Be A Good Sportsman.
4. Keep The Waters Of North Carolina Fit For Fish.
5. Buy Your Fishing License Now.
6. Take A Youngster Fishing With You.

Color Plates Reproduced From Water Colors By DUANE RAVER, Fisheries Investigator

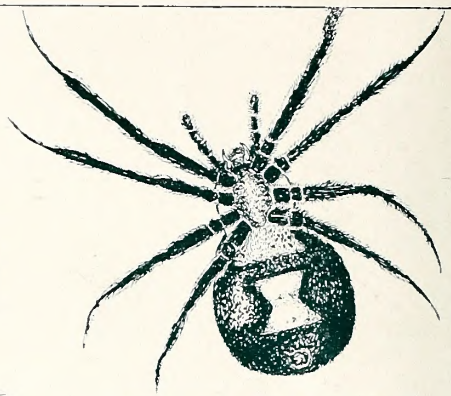
Are you a PAID subscriber to *Wildlife in North Carolina?* If so, you will receive by separate cover the fish chart reproduced on this page. The large 17 by 22 inch chart depicts twelve common game fish in full color. It is a handy aid to identification. The fish were painted in water colors by Duane Raver, Fisheries Investigator of the Wildlife Resources Commission. Until the supply is exhausted, all new subscribers to *Wildlife* will receive a fish chart free of charge. Subscribe now. Use the convenient form on page 3.

NORTH CAROLINA STATE LIBRARY

SUMMER OUTING HAZARDS



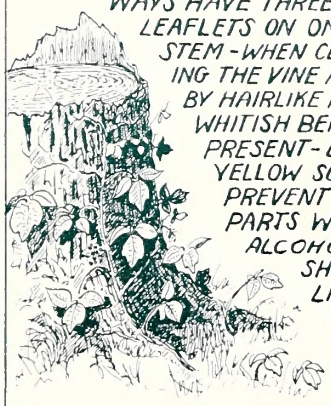
ALMOST INVISIBLE CHIGGERS OR RED BUGS LIVE IN DECAYING MATTER IN THE GROUND - OLD LOGS AND STUMPS - ANKLES ARE ATTACKED FIRST - THEY MOVE FAST 1-½ FEET PER MINUTE - THEY CAN REACH YOUR BELT AREA IN 2 TO 3 MINUTES - CHIGGERS DO NOT BURROW IN THE SKIN - THEIR SALIVA CAUSES THE ITCH FELT LONG AFTER THE BUG HAS FED AND DROPPED OFF



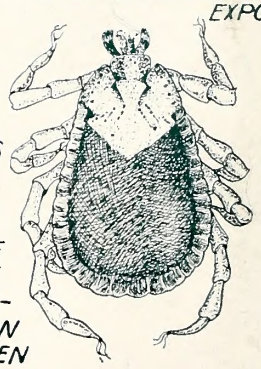
FLOWERS OF SULFUR DUSTED ON THE BODY AT THE NECK - BELT LINE - WRISTS AND ANKLES IS THE MOST SUCCESSFUL REPELLENT - PEOPLE SENSITIVE TO SULFUR SHOULD USE OTHER REPELLENTS - DO NOT SCRATCH THE BITES

THE BLACK WIDOW HIDES IN DARK PLACES - BE CAREFUL AROUND RUBBLE PILES - OUTHOUSES AND THE UNDERSIDE OF BRICKS & BOARDS - THE BRIGHT ORANGE HOUR GLASS ON THE ABDOMEN IDENTIFIES THIS SPIDER - BITES MUST BE TREATED BY A DOCTOR IMMEDIATELY! KEEP CALM - EXCITEMENT SPREADS THE POISON

IVY POISONING IS BEST PREVENTED BY AVOIDING THE PLANT - IT CLIMBS POSTS & TREES & RUNS ON THE GROUND - THE LEAVES VARY IN APPEARANCE BUT ALWAYS HAVE THREE LEAFLETS ON ONE STEM - WHEN CLIMBING THE VINE ATTACHES BY HAIRLIKE AIRIAL ROOTS - WHITISH BERRIES MAY BE PRESENT - LATHER OF STRONG YELLOW SOAP DRIED ON THE SKIN HELPS PREVENT POISONING - WASHING AFFECTED PARTS WITH YELLOW SOAP FOLLOWED BY ALCOHOL REMOVES THE POISON OIL - SHOTS GIVEN BY DOCTORS MAY RELIEVE SEVERE CASES AND IN SOME INSTANCES CONFER TEMPORARY IMMUNITY



TICKS WAIT ON WEEDS AND BUSHES FOR A HOST TO COME BY - DON'T PULL OFF ATTACHED TICKS - USE OIL OR A CIGARETTE COAL APPLIED TO THE TICK - STERILIZE THE BITE - EXAMINE THE BODY CAREFULLY AFTER EXPOSURE



TICKS MAY CARRY DEADLY DISEASES AND ANY SYMPTOMS SUCH AS FEVER OR RED PATCHES ON THE SKIN SHOULD BE CALLED TO A DOCTOR'S ATTENTION IF YOU HAVE BEEN BITTEN BY A TICK

Above insect drawings are not to scale

Win Donat

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Wildlife
IN NORTH CAROLINA

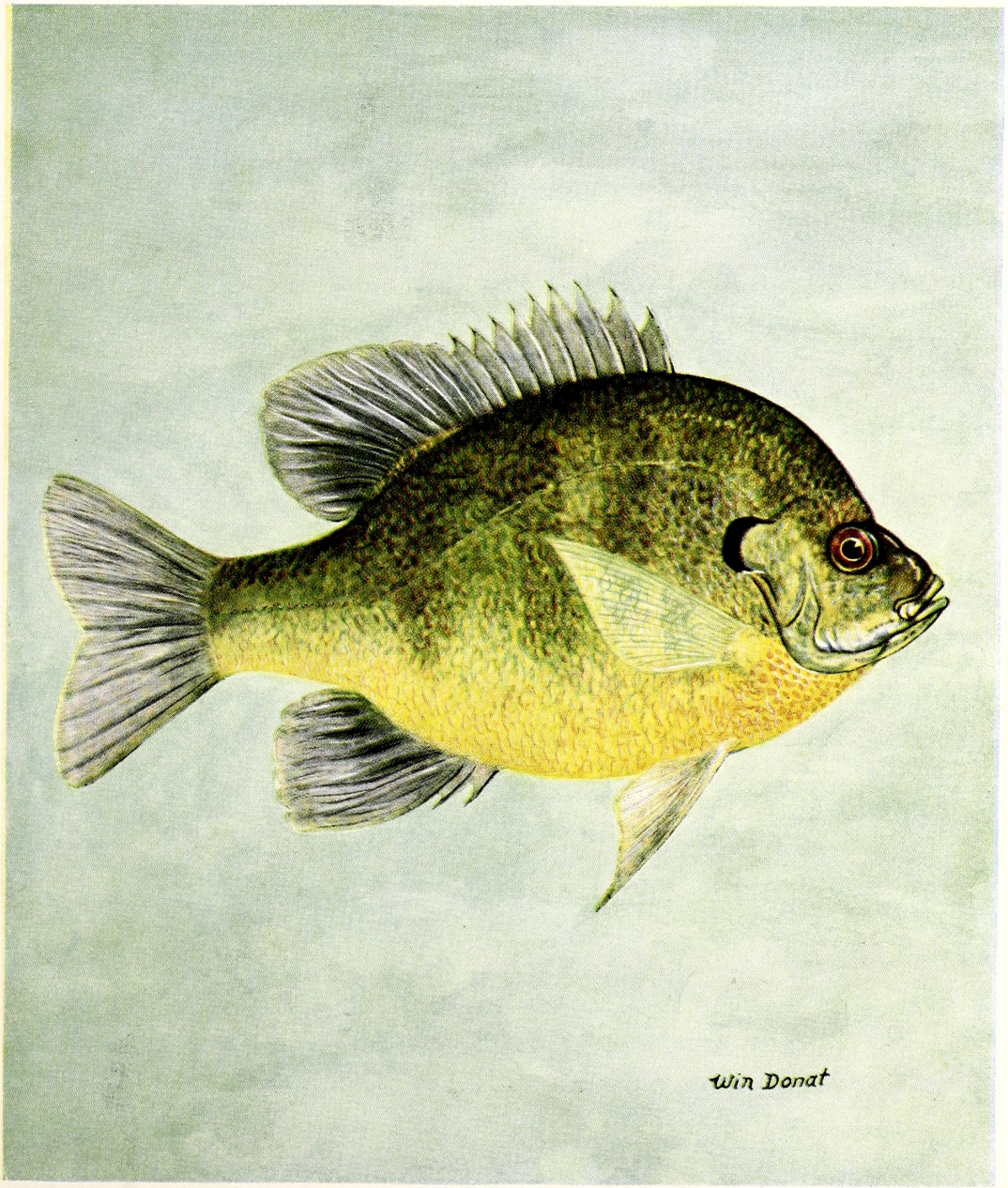

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Photo by Jack Dermid

Young Red Fox

"The red fox is the best-loved and most hated, praised and berated, wisest, smelliest, daintiest, thinnest, sleekest, most flea-bitten and most controversial creature to occupy the ardent attentions of hound, hunter and hennery owner in the nation!" — From *The Fox in New York* by Clayton B. Seagers.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

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Governor

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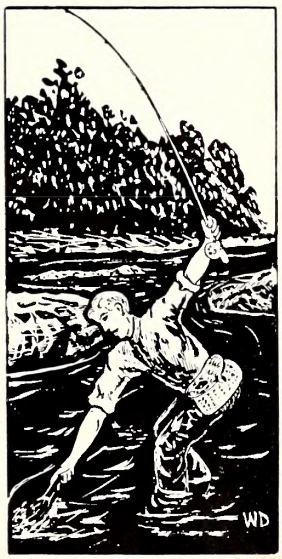

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Win Donat ..... *Art Editor*
Marty Mabry ..... *Circulation*

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COVER

As far as we know, this is the first time a male southeastern bluegill or coppernosed bream has been reproduced in color. Win Donat used water colors to show a light colored specimen.

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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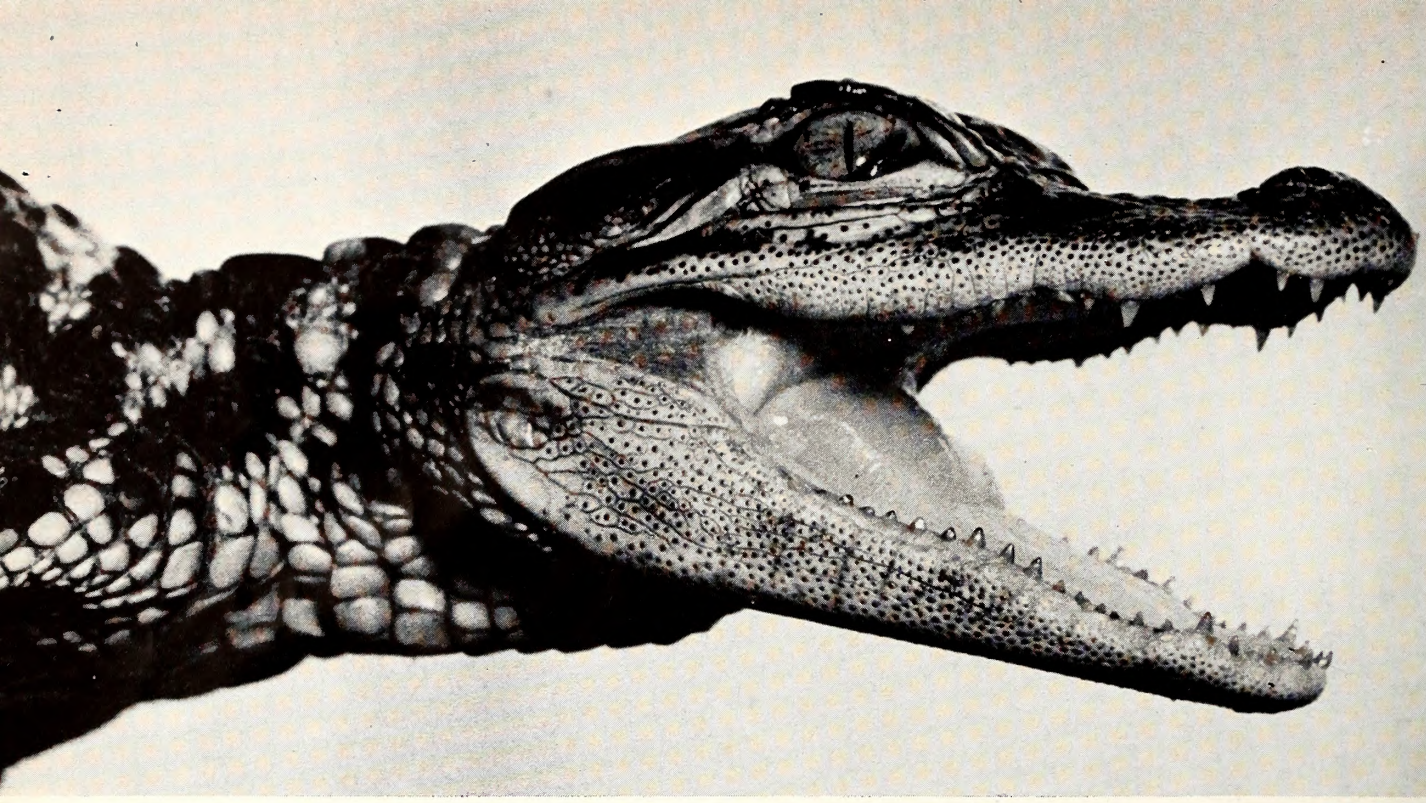


Photo by Jack Dermid

Portrait of a young alligator. Barely twelve inches long, it is a replica of the huge monster it will grow to be. Note the cat-like eye. The tongue serves as a valve to prevent water from pouring down the gullet when the alligator feeds below the surface.

LET'S LEARN *About Our Wildlife*

The Thirty-First of a Series on The Wildlife Species of North Carolina

THE AMERICAN ALLIGATOR

By ROD AMUNDSON

History

THERE ARE ONLY TWO TRUE SPECIES OF ALLIGATORS in the world. One lives in tropical and sub-tropical America, and the other resides along the Yangtze River in China. Altogether there are 21 species of reptiles in the crocodile group which includes the two true alligators and a species of American crocodile which ranges as far north as Florida.

The crocodilians, including alligators, are a group of huge lizard-like reptiles that seem to be a hangover from the days in ages past when gigantic reptiles dominated much of the earth. The largest living reptile today is the crocodile of India which reaches a length of 30 feet. The American alligator reaches a maximum of 16 feet, and few such specimens exist today outside of zoos where they have been in captivity for years. Chinese alligators seldom if ever exceed 6 feet in length.

Fossil remains indicate that the ancestors of alligators once roamed over much of the earth which is today too cold to support modern species. Although an occasional alligator is reported as far north as central coastal North Carolina, most Tar Heel alligators range along the coastal swamps of the southeastern part of the state.

For years men have known that the finest and toughest of leather can be made from alligator skins. Alligator leather commands a respectable premium in manufactured leather goods such as shoes, luggage, wallets, and handbags. The result has been a persecution of the species to the extent that alligators are now rare in North Carolina, perhaps dangerously near extinction.

North Carolina law does not take special recognition of alligators, although technically they are protected by law. Persons taking them have been convicted in court for so doing. Because of their shy and retiring habits, alligators are seldom seen except by fishermen and others who invade the quiet of secluded swamps. Despite the protection afforded by law, and the scarcity of the creatures, people still insist on killing alligators if for no other reason than to examine them close at hand. This wanton killing of a relatively harmless and remarkably fascinating species should be stopped.

Characteristics

How is an alligator different from a crocodile? Actually, there is very little difference between the two in internal and external characteristics except one important and easily recognizable feature. The snout of the alligator is bluntly rounded, and the snout of the crocodile comes to a point on a triangular head. This simple difference will serve to separate the two, although lengthy descriptions could be written of minor differences.

We shall assume that the reader has seen an alligator in the wild, a zoo, at a circus side show, or has at least seen its picture in a book. There are, however, some interesting features of alligators which merit discussion. Except for the back, alligators are covered with thick leathery plates. These are oblong on the under side and become round on the sides. The back, from head to tail, is a series of very thick bony plates which slightly

Fish and Wildlife Service Photo

Cross-section of an alligator nest. After building a huge nest of mud and vegetation, the female lays three or four dozen eggs.

overlap from their attachment to leathery skin beneath. Only the skin of the sides and belly may be used for leather, the bony back plates being too hard, tough, and thick for leatherworking.

An interesting attribute of alligators is a pair of musk glands, one on either side under the chin. These produce a strong-smelling secretion which can be expelled forcefully by the expedient of turning the glands literally inside out. The glands become especially active during the mating season, and are believed to be a means of signalling the whereabouts of the opposite sex. Persons who have smelled the musk consider that its odor will pervade a large area of swamp on a still night.

In general appearance, alligators are formidable indeed, but their huge jaws and gleaming teeth render them awe inspiring. The teeth vary in size and are of two groups—larger teeth at the outside of the jaw, smaller ones in a row just inside the large ones. All of the teeth shed periodically and are constantly being replaced by new ones. The skull, jaws, and head muscles seem to be adapted for one purpose; i. e., to grasp and crush items of food. A ten foot alligator could crush a man's thigh as easily as it could crush a breakfast cereal box, yet a man can hold an adult alligator's jaws closed with one hand!

Alligators are equipped by nature with the means for lying quietly in the water with only the eyes and nostrils protruding. Both eyes and nostrils are elevated from the skull structure. Thus the beasts can lie concealed in the dark swamp water and wait for a hapless animal to come down to the shore for a drink.

Alligators have ears, and these are guarded by bony plates which can cover them tightly when the 'gator submerges. The tongue is broad and thick, but fastened to the floor of the mouth over its entire length. It acts as a valve to prevent water from pouring down the gullet when the creature takes its prey under to eat it.

A cautious observer can learn much of the habits of alligators if he will use considerable stealth and a great deal of patience. He may drift along the dark waters of a swamp and see alligators lying along the bank basking in the sun. If he is in good 'gator territory, he may see a pair of eyes and nostrils come to the surface without so much as causing a ripple on the water. Should he chance to see one swim, he will note that the tail serves as the propelling agent, with the powerful legs folded close to the body. The hind legs serve in swimming only to keep the animal in position or to move it slightly in stalking prey. He may witness the spectacle of an eight-footer stealing up under a waterfowl and pulling it down to be eaten.

Breeding Habits

Enough has been learned of the breeding habits of alligators to say that they follow rather closely the habits of other reptiles. We have already described the function of the musk glands. Mating occurs in late spring, and in late July or early August the females build imposing nests for depositing three or four dozen large,

Baby alligators must forage for themselves from the time the eggs hatch. They are marked with yellow bands that will disappear with age.

Photo by Jack Dermid

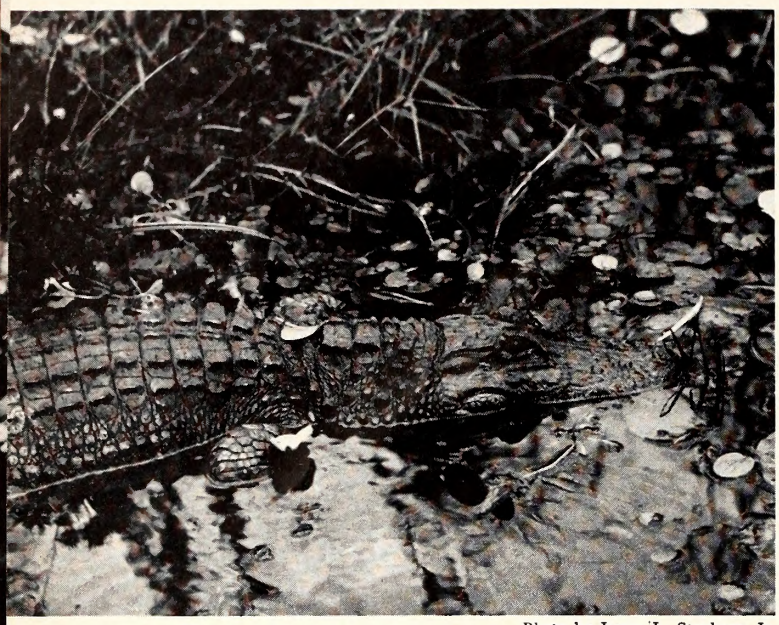


Photo by James L. Stephens, Jr.

This eight-foot 'gator was photographed in Lennon's Marsh in Robeson County, one of the last strongholds of the species in North Carolina.

hard, white eggs. Nests are usually a mound of mud and debris built up from the bottom of the swamp so that they are about four or five feet in diameter, and rise about two feet above the water. The mass of decaying vegetation in the pile generates considerable heat, and this undoubtedly assists in incubation. Once the nest has been piled up and the eggs are deposited, family life ceases.

Young alligators are about eight inches long when hatched. Where adult specimens are black when wet and muddy-gray when dry, young alligators are marked with yellow bands. These disappear as the 'gators grow.

Something should be said of the growth of alligators. It is commonly believed that they grow very slowly and reach astounding age in years. The latter may be true, but 'gators grow rather rapidly. Raymond L. Ditmars, one of the world's outstanding students of reptiles, raised some alligators in the New York Zoological Park. They grew from eight inches at hatching to six feet long and 72 pounds in five years. People who have acquired baby alligators and tried to raise them as pets will attest to the rate at which they outgrow their pens.

Food Habits

From the time of hatching, alligators are voracious eaters of flesh. Young 'gators feed mostly on fish, while adults look for larger game including waterfowl, forest animals, and probably turtles. In Lennon's Marsh near Lumberton, North Carolina, there is a large heron rookery, and a small population of alligators. When the young birds fall from the nest, the alligators are on hand to gobble them up. The herons gain somewhat of revenge by pillaging alligator nests.

There are few if any records of alligators having eaten human beings. Large specimens would certainly be capable of killing and eating a human, but apparently their fear of man overcomes any inclination to become man-eating.

Denning

Even a novice who knows what to look for can find alligator trails through heavy vegetation in the marsh surrounding a swamp. With a little practice he can trace the trails to where they terminate in a den. The openings of the dens are invariably under water, and the 'gators apparently enlarge the channel or tunnel leading into the point where the den is excavated in the swamp bank or a raised area of solid ground. Few people have ever explored an alligator den. The rank vegetation, the cloying swamp smell, the mud, slime, and darkness of an alligator den must make it an unpleasant place indeed by human standards. During the cold winter months alligators retire to their dens to hibernate, and during the active seasons of the year use them for loafing purposes.

Management

Although many people believe alligators to be harmful or dangerous, those remaining in the southeastern states should be given the most rigid protection possible. There may be some pleasure in hunting them, but there is little to support alligator hunting as a sport. A stealthy hunter can wait for a 'gator to appear and has only to take careful aim to kill it with a single shot. Reptilian tenacity to life may make the creature hard to bring to bag, but that fact does not spell sport. Alligators have been for years a valuable source of revenue for their skins, but they are now so few in most areas that shooting them for their skins is unprofitable as well as illegal. Under careful protection, and later careful harvesting, alligators could again provide at least some revenue and beautiful leather. Otters were once nearly extinct in North Carolina, but careful protection together with cooperation of trappers in otter territory have brought otters back to the point where now an open season is permitted. The same can be done with alligators.

Alligators make well-defined trails throughout their haunts. Here one leads from open marsh into bordering vegetation.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Regulations for Coming Season Printed

At press time it was expected that the 1951-52 hunting regulations would be in the hands of license dealers throughout the state by August 1 when the hunting licenses and combination hunting and fishing licenses become effective. Each purchaser of a hunting license or trapping license will be given a copy of the regulations, plus a small leaflet on safety in handling firearms. The leaflet was produced by the Sporting Arms and Ammunition Manufacturers Institute, and this organization provided enough copies of the leaflet (290,000) to go with each copy of the regulations.

* * * *

Pre-Service and In-Service Training School Under Way

On July 9 the first session of the Wildlife Resources Commission's pre-service and in-service training school got under way with 13 prospective wildlife protectors and 25 wildlife protectors (hired since last year's school) enrolled. The Wildlife Protectors' Training School is conducted by the North Carolina University Institute of Government at Chapel Hill. The Institute has established a national reputation for its unexcelled work in training law enforcement officers of all types.

Following the July session will be two sessions of intensive training for wildlife protectors now in service. Of the pre-service trainees, those completing the course successfully will be held in reserve to fill positions as openings occur.

* * * *

Further Warning Against Picking Up "Woods Babies."

The Wildlife Protection Division of the Wildlife Resources Commission has issued a warning to Tar Heels against picking up young game animals found in the woods and fields. At this time of year the season is closed on game species, and the taking and possession of young deer, bear, raccoons and other animals is unlawful.

People frequently pick up fawns in the mistakened belief that they have been abandoned by their mothers. Only on extremely rare occasions are fawns actually orphaned, and more rarely are they abandoned. Persons finding fawns believed to be abandoned or orphaned should report them to their county wildlife protector. The same applies to young of other species.

* * * *

Wild Swan Attempts Long-Distance Swimming Record

No one knows the destination point, but the starting point was Orton Plantation south of Wilmington. A swan that was crippled during the past waterfowl season had been picked up by a federal law enforcement agent and given to Orton Plantation as a tourist attraction. The swan, however, decided to head back north. It followed the Inland Waterway by the only means of locomotion left to it,—swimming. It was picked up near Lowlands, at least 125 miles away.

Photo by Jack Dermid

Raccoon raiding an apple tree. The bulk of North Carolina's raccoon population occurs in the eastern lowlands, where in recent years because of low fur prices, the species has increased in numbers to the point of becoming a pest.

State-Wide

FUR SURVEY

by **Ken Wilson**

Fur Resources Biologist

Here is the latest information on the status of fur animals and trapping in North Carolina.

FIFTEEN HUNDRED AND THIRTY DOLLARS' WORTH of fur caught by one trapper in two months! Coastal Currituck county normally yields a crop of 30 to 40 thousand muskrats annually. Last winter's harvest of mink and muskrat brought tar heel trappers over $600,000 in cash. The fur dollars on hundreds of farms in North Carolina annually benefit someone else because many farm boys do not know how to trap. A few hundred farmers and semi-professional trappers caught the bulk of last winter's bumper crop of 20,658 mink. Successful trappers find that it pays to keep their mouths shut. Last winter, North Carolina's wilderness and remote waterways produced a record crop of 1,304 otters. These facts represent a sample of the variety of information being dug up in the present state-wide fur survey which the Wildlife Resources Commission is conducting with the aid of Pittman-Robertson funds.

The Fur

Eleven species of fur animals are annually trapped legally in the State. Of these, muskrat, raccoon, mink and opossum, in the order named, are taken in the largest numbers. Others on the legal list are otter, weasel, skunk, civet cat, gray fox, red fox, and wildcat. Two other fur animals present in the state, but not in sufficient numbers to trap, are beaver and nutria. The latter, known to some people as coypu or South American beaver, is present in small numbers on the Outer Banks near Cape Hatteras where they were introduced a few years ago by a sportsmen's club. A stocking of 29 beavers made in 1939 on the Sandhills Wildlife

Area in Richmond county has increased. A survey of the area in 1950 revealed the presence of 77 colonies. As this interesting and valuable furbearer becomes more widespread, it, too, may be on the trapper's list.

For the most part, the best quality fur comes from western and mountainous portions of the state. Here the muskrats are mostly brown, heavier and softer furred, whereas the coastal variety is frequently black and not so heavily furred. Mountain mink are also silkier and more valuable, averaging twenty dollars or better per pelt. While opossums are evenly distributed over most of the state, the bulk of the skunks, including the civet, come from western counties. Red foxes also prefer the mountains. Gray foxes, however, are common in practically every one of the state's 100 counties. The bulk of the raccoon population is located in the vast acreage of swamp land in the eastern part of the State. Here its numbers have increased to the point of making it a pest. The extent of the otter's range in North Carolina is not yet known. Though plentiful enough to be trapped in 41 eastern counties, it is constantly pushing its range farther west, especially along the Yadkin River and tributaries where sign of its presence has been noted. Except in certain mountainous sections, weasels are generally not abundant. Wildcats are present in both eastern and western counties and also on the Sandhills Wildlife Area where a few of the "bobtails" are taken by state trappers every year. Cats in the east live largely in swamps while those in the west seek the seclusion and comparative safety of mountain ledges and ravines.

The Trapper

About 3,000 people annually buy a trapping license in North Carolina. Farmers trap most of the fur. A few women and girls run traplines but the bulk of the peltries annually harvested are trapped by father and son. The lure of the trapline has long been strong in the minds of men. Many a trapper has lain awake far into the night planning the trapline and dreaming. The several families of muskrats living on the creek below the house, mink tracks in mud along the river and even the spoor of an otter, how to catch that wily chicken-eating fox, the silly looking opossum whose pelt did not bring much but made excellent 'possum pie, money for a bike and maybe some dollars saved toward a future college education. Dreams! Practical dreams backed up with trapping know-how and hard work that have helped finance many a young man through college.

Trappers by nature are of two lots, those that talk and those that don't. Most often the talkative one is the beginner. He can afford to talk because he has nothing to lose. Like his scant knowledge of the fur animals he would trap, his results in fur caught are also scant. So, to fulfill at least partially shattered dreams, he talks about a lot of things that never happened. Then there's the trapper who experiences grave difficulty in resisting the temptation to steal the fur and the traps of a competitor. If one day he ends up with a battered face and crippled conscience, he has only himself to blame. Most good trappers who have mastered the art of trapping, also are masters at keeping their mouths shut. If your trapping territory produced 50 to 100 mink a year, not to mention scores of muskrats, raccoons, other fur, and an otter or two, you too would soon learn the necessity of silence. But, last winter, through the help of a fur dealer friend, I ran into an exception to the rule. He talked! No secrets divulged, understand, but after two hours I was willing to believe that my trapper friend knew how to trap. In two months, with still two weeks to go, this is what he had caught: 52 minks, 204 muskrats, 30 weasels and raccoons—total amount of money paid for the fur by the fur dealer seated by my side, $1,530.00. Every good mink county in the State, and there are a lot of them, probably has two or more trappers like this Indian I've been telling you about. They catch from 50 to 100 or more mink a year, keep it a secret, and the only person who knows is the fur dealer. And he won't talk. Mink trappers in the Piedmont and Mountain sections use entirely different trapping techniques than Coastal Plain trappers. Many of the latter maintain a 300 to 500-trap trapline in some of the larger swamps. Long hours and hard work are their constant companions throughout the winter. I made the rounds with one such trapper who caught 126 mink three years ago and fewer than 20 last winter. As every alert trapper knows, mink sometimes change their range overnight. And that is what happened on his line.

Currituck county and portions of Dare county on the outer banks provide the best muskrat trapping opportunities in the state. Most of the land is privately owned and managed for waterfowl. Some landowners trap the marsh themselves, but in most cases marsh guards are allowed to trap in lieu of salary and a few marsh owners lease trapping rights. Knotts Island near Virginia on the northern fringe of Currituck Sound is the muskrat trapping center in the state. A large segment of the male population traps. No one knows how many

Photo by Ken Wilson

Currituck County muskrat trapper and a small portion of the winter's catch. Mink and raccoon pelts are included.

Photo by Ken Wilson

Thousands of mink are caught by luck each year. This one was taken in a trap set for muskrat.

'rats are annually taken but it's probably between ten and twenty thousand. At least two trappers in the county trap 1,000 or more muskrats per season but the majority of catches range from a few dozen to five or six hundred.

During the past four years, muskrat populations in tidal marshes have gradually dropped off. According to fur dealers, the 1950-51 season was the poorest in years. Possibly disease or predation are principal limiting factors. No one knows. Current investigations now being conducted in the state-owned Northwest River Marsh reveal large numbers of muskrat houses dug into by raccoons. Some of them contained young muskrats that were later found missing. Much of the evidence is circumstantial but it does appear that the ubiquitous raccoon population in the county is eating up a sizeable portion of what we hoped would be next year's muskrat crop.

Tabulating the Fur Harvest

During the 1950-51 trapping season, 171 fur dealers bought fur in North Carolina. Of these, 148 reside in the State and 23 live out of State. Each spring, every fur buyer is compelled by law to fill out forms reporting the number and kind of furs purchased. The data from these reports are used to determine the annual value of the fur resource. Table I gives the total figures for each species of furbearer trapped in the state and what was believed to be the average pelt price received by the trapper. Prices paid by fur dealers varied considerably in every section of the state. Generally speaking, fur dealers who bought the most fur paid the highest prices. Muskrats in the northeast coastal section brought highest prices during late January and early February, 1951, when a price of $2.75 was paid for good assortments of medium or larger pelts. A fur dealer's price war that broke out on Knotts Island in February forced prices up to $3.25 per muskrat. Naturally a break like this pleased the trapper.

Most trappers in Currituck and nearby counties leave their 'rats at the local fur dealers for a professional to skin. Good skinners take off between 50 to 60 pelts per hour. The cleaned muskrat carcasses are then placed in refrigeration and shipped to Baltimore and Philadelphia for human consumption. Trappers who skin and cure their muskrats often hold them for those February high prices at which time they sell for a good profit. One hundred and one muskrats trapped last winter from the Northwest River Marsh and sold in this manner brought an average of $2.26 per pelt.

December is the best month to trap mink in North Carolina, their pelts are primer and glossier, therefore bring more money. Prices during the 1950-51 season held up exceptionally well, however, and as late as January 30 large mink were still bringing between sixteen and eighteen dollars. Whereas there was little difference in prices paid for mountain and coastal plain muskrats last season, prices paid for mink differed. Average lots of mountain mink brought $20 per pelt and in some instances $22, whereas the top price paid for most coastal mink remained at $18. The difference: heavier fur of silkier quality and from what I saw, a somewhat bigger mink.

Table 1. Value of Fur Peltries Sold in North Carolina 1950-51*

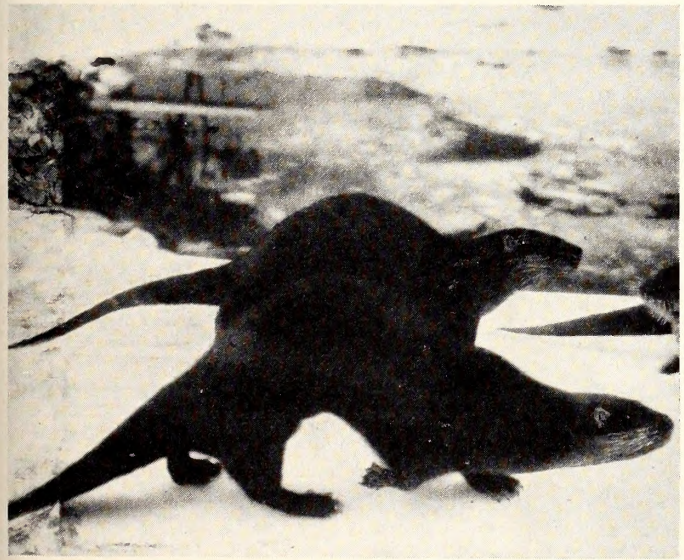
Fur Animal	*Number*	*Average Value Per Pelt*	*Total Value*
Muskrat	158,864	$ 1.75	$286,263.75
Raccoon	32,039	.75	24,029.25
Opossum	14,305	.30	4,291.50
Mink	20,658	16.00	330,528.00
Otter	1,304	15.00	19,545.00
Weasel	1,222	1.50	1,833.00
Skunk	1,978	1.75	3,461.50
Civet	69	1.00	69.00
Gray Fox	1,302	.35	455.70
Red Fox	197	.75	147.75
Wildcat	64	.50	32.00
			$670,656.45

*Fur values in this table were obtained from the average of prices paid to trappers by fur dealers from every section of the state.

The value of North Carolina's 1950-51 fur crop has been estimated at about $670,000. Twenty thousand six hundred and fifty-eight (20,658) mink brought the trapper about $330,000 or 49 cents of every dollar's worth of fur. A total of 158,864 muskrats was sold for an estimated $286,264 or 42 cents of every dollar's worth of fur. Raccoon and otter peltries amounted to 43,574 or 6 cents of every fur dollar. Ridiculous as it may seem, fur from the seven remaining animals was valued at about $10,000.

While North Carolina is not listed among the leading fur producing states, it does rank among the first 15 states in mink and raccoon production and second only to Louisiana in number of otters trapped. Last season's harvest of over 20,000 mink without doubt will place us ahead of any of the coastal states from Maine to Florida.

From time to time the question arises, "Does the Fur Dealer's Report list all the fur annually trapped in the state?" NO! Some trappers ship fur outside the state, but no one knows how much. Questionnaires filled out last year by 98 state game protectors revealed they believe that about 80 percent of the fur annually trapped in the state is sold to fur dealers, the remaining 20 percent being mailed to fur houses outside the state. Despite their annual offers to pay fantastically high prices, the majority of trappers subsequently learn that they can get a better deal by selling at home. Most out of state fur shipments are made from counties in which there isn't enough fur to attract a full time fur buyer. The writer believes that at least 90 percent of all fur trapped in the State is bought by North Carolina fur dealers. However, until the day when all fur shipped out of state is listed with postal authorities (and this would necessitate legislation) the true value of North Carolina's fur resources will not be known.



Fish and Wildlife Service Photo

More than 1,300 otter were taken by Tar Heel trappers last season, a record in recent years for the State.

When Should the Fur Crop Be Harvested?

When should the fur crop be harvested? When should the season begin and when should it end? Every boy who has ever trapped knows that November caught muskrats bring only about half as much money as those taken in February. But the same boy has likewise found out (to his sorrow) that mink trapped in February don't bring nearly so much money as those hung up in the attic in late November and December. He has also observed (black and blue spots on the neck where held down by the male) that many female mink mate in January. By February, embryos have attained marble size and many trappers who catch female mink at this time destroy any where from 3 to 8 or more babies and 60 to 160 dollars' worth of potential fur. In brief, when the muskrat is primest and best to trap, the mink is not. Conversely, in November when mink are approaching primeness over many parts of the state, the muskrat is anything but prime. To get around the difficulty, someone might suggest opening the season in November for mink and in December for muskrat. But both furbearers in many instances occupy the same habitat, often use the same trails and on numerous occasions traps set for mink catch muskrats. Confronted by the dilemma it was decided to get out among the trappers and fur dealers of the state and find out by personal contact what they thought. When in their opinion should the fur crop be harvested? When should the season start and when should it end? Every section of the state as listed under Commission Regulations for trapping was covered, namely: The Northeast (Currituck and Dare—Outer Banks — counties), the Northwest (Watauga, Ashe and Alleghany counties), the Southeast (13 counties), remainder of State (82 counties).

The Northeast

Trappers and fur dealers in Currituck and Dare counties were unanimous in the opinion that the muskrat here produces the greatest dollar income and should therefore be given top consideration in drawing up trapping regulations. In normal years, the muskrat harvest from these counties lies between 35 and 45 thousand muskrat. Trappers and fur dealers like a December 15 opening date because 'rats taken before this time are largely poor merchandise. A February 28 closing date suits the majority but a few trappers and one fur dealer believe closing the season two weeks sooner would eliminate a lot of over trapping and subsequently result in bigger muskrat yields for everybody. Because the 'rat crop has dropped off sharply in recent years, a shorter season, Dec. 15 - Feb. 15 has been recommended for consideration by the Commission.

The Northwest

The principal fur animal of value in this three-county mountainous section is muskrat. Opossums are also

• CONTINUED ON PAGE 17 •

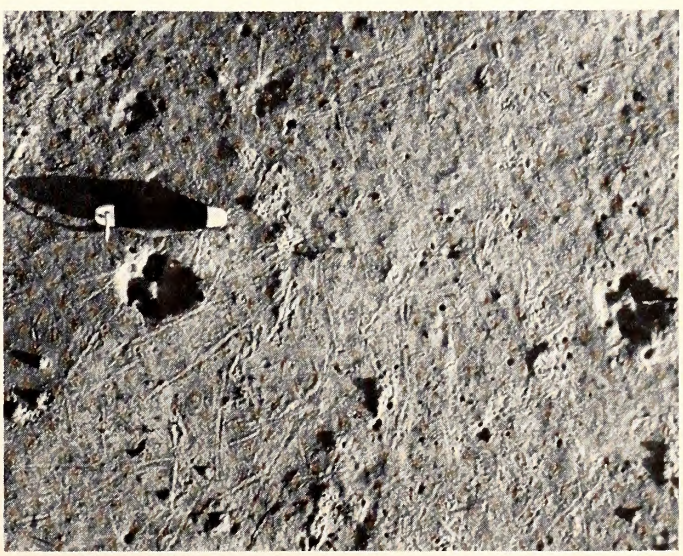
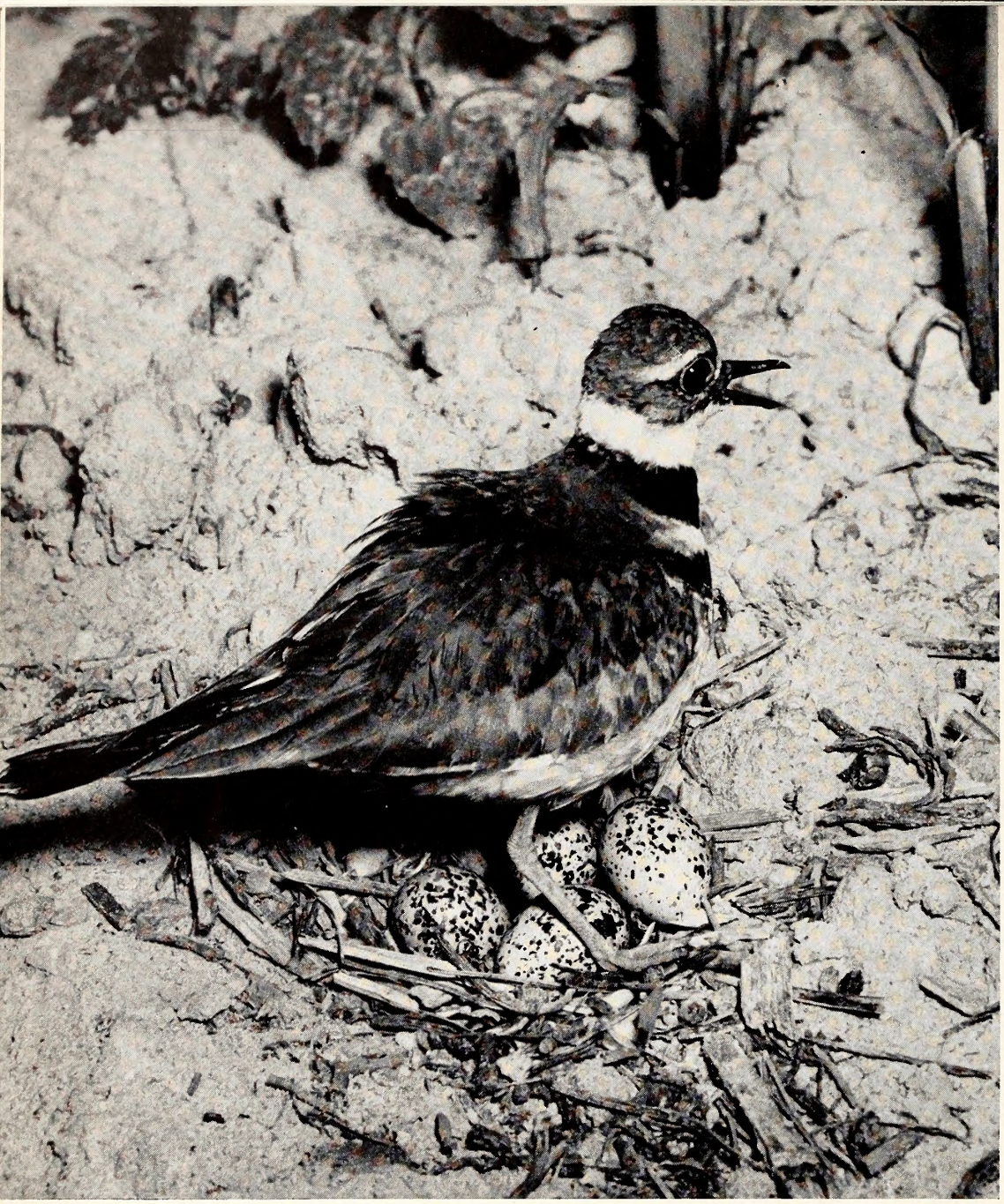
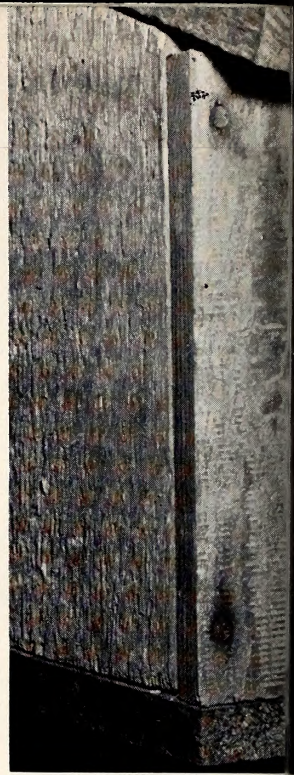


Photo by Ken Wilson

Tracks of a gray fox in Currituck County mud. Gray foxes are common in practically every county in North Carolina.



An adult killdeer stands over its four large eggs. The bird remained on its nest in a cornfield while the land about it was being cultivated with a tractor, but the photographer had to use a blind to make the photo.



Bluebirds like to set up
will provide a tasty morse

GLIMPSES

The nesting s
through sumn
territories to e
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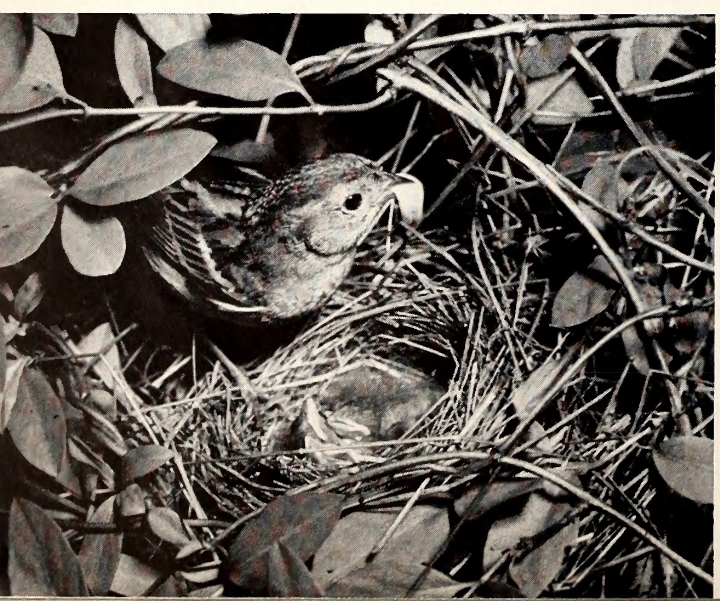
ical season, to

Cleaning house is part of raising a family. A field sparrow is shown removing the dropping of a youngster from the nest.



A one-day-old field sparrow is a picture of perfect helplessness. It
soon outgrow its nakedness and awkward appearance.

n a custom-made house. The green caterpillar
hungry and greedy nestlings inside.

One of sixteen eggs bulges from under the front of an incubating bobwhite quail. She will lead the downy young away from the nest soon after the eggs hatch.

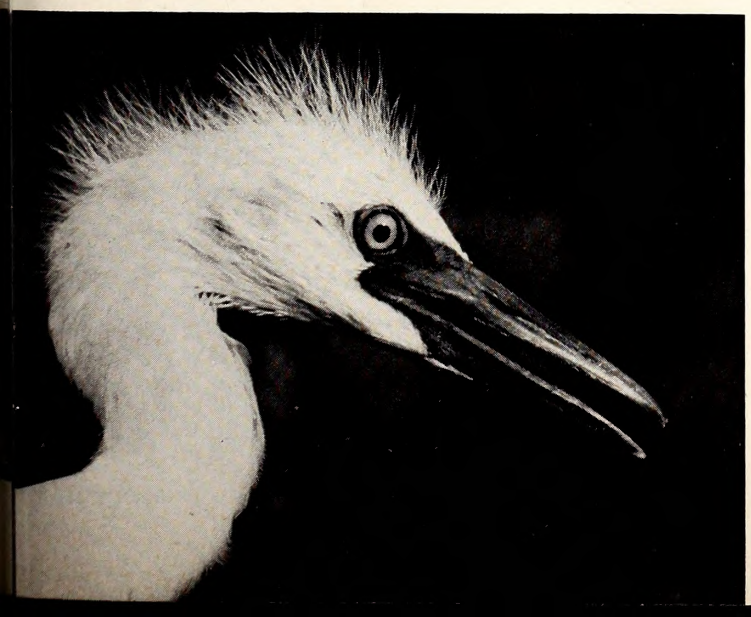
Vesting Season

irds is a busy time, and from early spring
tdoors teems with their activity. There are
sts to build, eggs to lay and incubate, and
rotect, and finally drive away. It is a crit-
se weather and predators may raise havoc.

Photos by Jack Dermid

All legs and no tail is this young yellowthroat. Young birds are fed and protected by their parents for some time after leaving the nest.

is immature little blue heron was raised in a colony of many heron
ilies. The dark plumage of the adults will be acquired during its
ond summer.



THIS IS MY JOB

An important part of a district biologist's job is to give technical assistance to landowners for the improvement of wildlife habitat. Above, Biologist Woodhouse inspects a hedge of multiflora rose in Guilford County.

by Charles B. Woodhouse

District Biologist Wildlife Resources Commission District Three

DISTRICT BIOLOGIST, wildlife biologist, game management specialist, wildlife protector, game propagator, "wildlife man"—I answer to any of these designations, and many others not suitable for printing here. Of course, anyone driving a car with a State seal on the side and a permanent license plate is "fair game" to a lot of people and should be able to answer questions about any state department in which they are interested. I even had the humorous experience of being stopped by a weather-beaten citizen in one of the more remote areas of the State and queried on getting some road work done. I was struggling along a very muddy road looking for a particular farm when I was hailed by this individual with the inquiry as to when in the h— we were going to pave his road as had been promised! It turned out that he could not read and no amount of protesting on my part could convince him that the seal on the side of my car was of the Wildlife Commission rather than the Highway Commission. After being berated at length, I proceeded merrily on my muddy way with the thought that perhaps I had served a purpose; he was much more content with his road after having "told off one of those State people."

But, to get to the more serious and pertinent side of this work. I am one of nine biologists located one in each of the geographical districts into which the State is divided by an act of the legislature. There are eleven counties in this district and it is my duty to represent the Commission on matters pertaining to game management problems within these counties. These duties include the handling of habitat improvement materials—which will be discussed more in detail later—making talks on wildlife conservation to wildlife clubs, civic groups, 4-H clubs, and other interested organizations. Another phase is the locating of, and providing technical assistance for the improvement of wildlife habitat areas on privately-owned lands. Then there are such special activities as censusing bicolor strips for quail usage, making road counts of mourning doves, censusing woodcock breeding grounds, transplanting beaver from over-populated areas, and writing newspaper articles and making radio talks about my work in the district. Variety is the spice of life!

The official designation of the project to which I am assigned is Upland Game Restoration Project 25-D.

This is one of the many Federal Aid projects being conducted by the Wildlife Commission in which three-fourths of the cost is borne by the U. S. Fish and Wildlife Service through the excise tax on arms and ammunition, and the other one-fourth comes from revenue from the sale of hunting and fishing licenses. This project is concerned primarily with the conservation and restoration of our farm game species, such as quail and rabbits, and the wild turkey. Most of the turkey restoration work is being done on state-owned lands at the present time, with plans for development of private holdings in the future as conditions permit. There are no turkey management areas in my district at the present time, but in the districts where they are located the biologists assist with working out management plans, land-clearing operations, and supplemental food patch planting.

The number one game bird in the state is the bob-white quail and a considerable portion of the district biologists' energies are directed toward increasing his numbers. However, it should be pointed out that any management work done for a particular small game species is going to benefit the others, as well as innumerable non-game birds and animals.

Research has shown that the proper method of building up small game populations is by improving habitat conditions—in other words, providing them with a better place in which to live and propagate. With quail the main problem has been to supply a dependable, permanent food and cover supply, particularly during the late winter months when the birds find the going very rough. Most landowners are interested in improving conditions for small game on their farms, if these improvements can be made to fit into their other land-use activities. The three plants which we are using in our habitat development work — bicolor lespedeza, sericea lespedeza, and multiflora rose — meet these conditions very well.

Bicolor is a bush-type lespedeza which is proving to be an excellent quail food. The advantages of this plant over most other wildlife food plants are: it is permanent—keeps coming back year after year without spreading and becoming a nuisance; controls erosion and stabilizes field borders; provides an excellent source of late-winter food when most others are gone. Sericea is not a favored food but does provide excellent roosting and nesting cover for quail, and is of considerable value in controlling erosion. Multiflora rose, in addition to making a stock-proof fence, provides escape cover and some food for various small game and non-game species.

Bicolor plants, multiflora plants, and sericea seed are distributed by the Wildlife Commission during the winter months each year. These materials are made available to landowners and other interested individuals, free of charge. They are distributed through the co-operation of Wildlife Clubs, Extension Service, Soil Conservation Service, and other interested agencies and organizations. Planting stock can be obtained by contacting one of the above agencies, the biologist in your district, or by writing direct to the Wildlife Resources Commission in Raleigh.

It is my job to handle and process all applications for planting stock which come in from District Three. Where practical I contact the individual concerned, check planting sites, and offer advice on making plantings. I assist with the delivery of materials during the plant distribution season. During the spring and summer months most of the time is spent following up plant deliveries, seeing that the materials are properly used, and checking on the success of plantings.

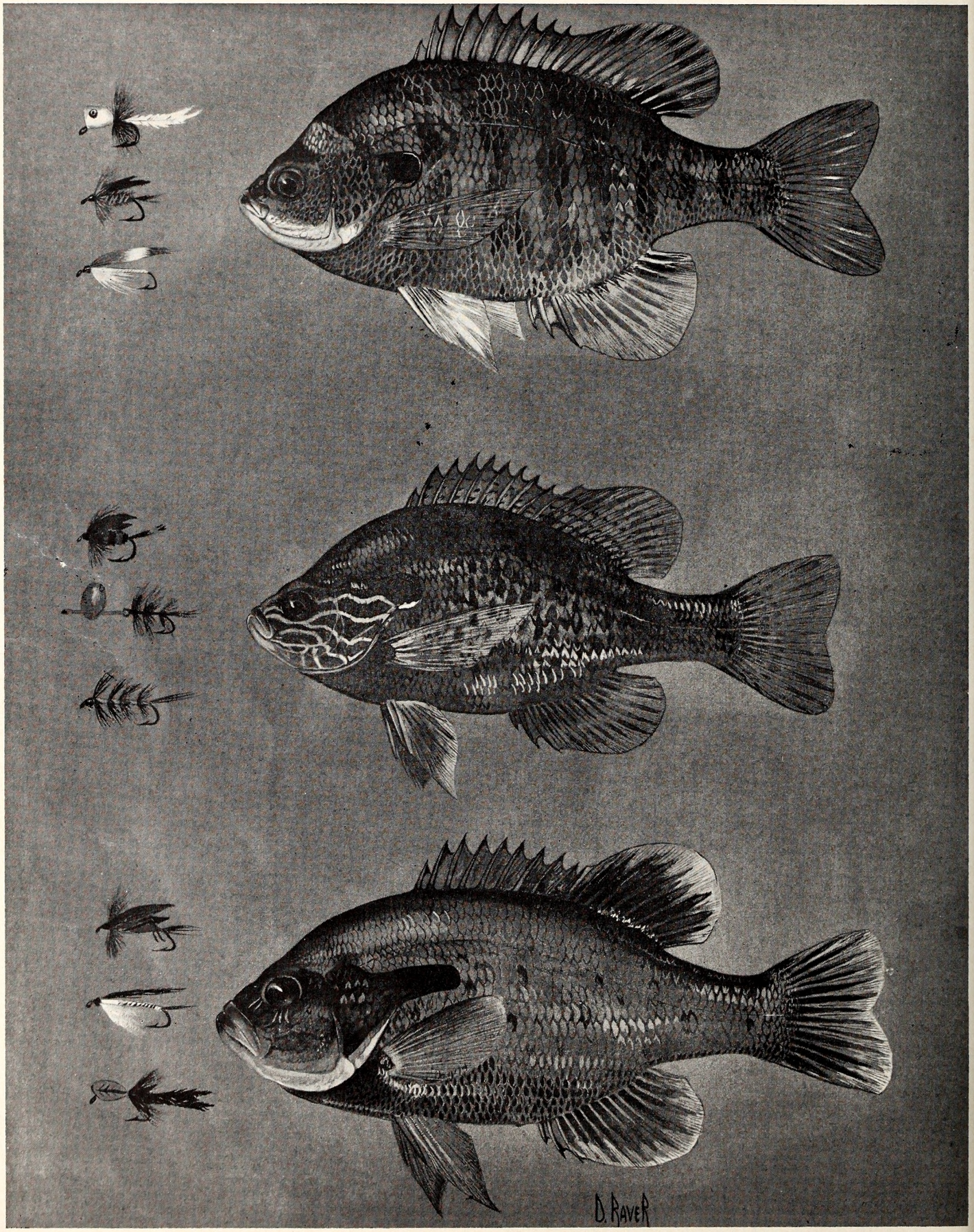
During the 1950-51 season the approximate amount of planting materials distributed in this district was as follows: some 250 applications totaling 450,000 bicolor plants, 44,000 rose plants, and 350 pounds of sericea seed. While totals for the different districts vary somewhat, the above is about average for the nine districts in the State.

Theoretically, a District Biologist works eight hours a day, 5½ days a week. However, much of our work involves being out early and getting home late, or being away from home overnight. During fall and early winter as the hunters' interest in wildlife begins to reawaken, I will have as many as three or four night speaking engagements in a week. Am I complaining? No, there is something about this business of bettering conditions for our furred and feathered friends that is truly fascinating. I like it — if I didn't I wouldn't be in it!

Bow and arrow hunters in the United States bag more than a thousand deer, a dozen bear, a few elk, and some puma, javelina and wild boar every year, the Fish and Wildlife Service reports.

Weldon, N. C. is the site of the only striped bass hatchery in the world.

Both wildlife and landowners benefit from a field border of bicolor lespedeza. See text.


D. RAVER

THREE of a KIND

Story and Painting By Duane Raver

ASK MOST FISHERMEN WHAT KIND OF FISH are pictured on the opposite page and the usual answer ill be "bream." This term is slightly overworked, and obably will continue to be. But let's look a little closer; ese three of a kind aren't exactly that. The top one the bluegill; *Lepomis macrochirus,* if you want to get chnical. Color is never a good identification characteric in fish, so the black and white reproductions seen re are all right to use for picking out some identifying arks.

First of all, the bluegill's mouth is quite small in oportion to the rest of its body. Next, notice the light ea on the lower jaw; this may be almost white or a rk gray-blue, but it's almost always lighter than the st of the head. The "ear flap," that little tab at the ck of the gill cover, is short and all black. It may be uare or rounded but is seldom longer than it is wide. neck the dorsal or back fin; toward the back end, there a dark spot or blotch near the body of the fish. Sometnes this is more easily seen by holding the fish up the light and spreading the fin out flat. In some uegills another spot of the same sort is present on e anal fin toward the back of the ventral side of the h. Don't depend on color for identification. Bluegills ay be almost silvery white to black with all sorts of eens, blues, and purples in between.

The middle one of the three is a common sunfish or llow belly. The books call him *Lepomis gibbosus,* but any fishermen still call him a bream. Although here gain colors aren't too reliable, some of the markings ill set this sunfish apart from his cousins. The mouth small like the bluegill's, and the body shape is almost ctly the same. Those light wavy lines on the cheek d gill cover will usually give him away. Combine these ith the bright red or orange tip on the ear flap and u've got the common sunfish. There is no dark blotch the dorsal fin, unless you happen to have a hybrid h, which is not too unusual. The common sunfish is scrapper but isn't considered quite in the same class ith the bluegill.

The robin, or red breast, is shown at the bottom of e page. *Lepomis auritus* is his scientific name. There little chance of confusing the robin with either of his o relatives pictured if you will just check his long ear ps. On some of the smaller individuals this long, narw extension won't be as pronounced, but it soon bemes obvious at first glance. This ear flap is solid black dark bluish-black, and certainly is the robin's exsive trade-mark.

• CONTINUED FROM PAGE 11 •

common and in some localities skunks. The mink population is comparatively small. Acreage in the area is largely pasture and vegetation bordering most streams is predominantly grass. The November 1 - February 28 trapping season, for years in effect in this section is of necessity long because, according to fur dealers, trapping oftentimes is not possible for extended periods during the winter. Fur dealers admitted that muskrats and minks taken early in November were often poor quality but because muskrats damage pasture in areas where allowed to become plentiful, farmers have found it necessary to keep populations at a minimum. And to keep them under control, everybody I talked to insisted that a 120-day trapping season was necessary.

The Southeast

In the 13 counties covered by this area, mink is the big money producer. In fact, statistics for the 1950-51 trapping season show that its fur made up 73 cents of every dollar while the muskrats share was only 15 cents. Despite this fact, however, last year's Jan. 1 - Feb. 28 season favored only the muskrat. Fur dealers and trappers who were interviewed agreed that February mink trapping annually results in the loss of thousands of dollars in baby mink destroyed not to mention losses from poor quality fur. All fur dealers agreed that mink trapping should start in December but believed the season for taking muskrats should remain the same. Separate trapping seasons for these furbearers is not practical. Because mink is by far the most important fur animal in the southeast and since its pelt it at its best during late fall and early winter, a Dec. 1 - Jan. 31 season on all furs has been recommended.

Remainder of the State

The trappers and fur dealers interviewed in this biggest trapping section of the state had mixed opinions on when trapping should begin and end. In counties where muskrats were common, a Dec. 15 opening date was sought but in most sections trappers and fur dealers were largely in favor of a trapping season that started Nov. 15. Opinions were based on the belief that the mink in their counties has the greatest money value. Fur statistics for the 1950-51 season proved that mink is the most valuable fur animal in the 82-county area. But again we are faced with a dilemma. No matter what date is selected for trapping, there will be some loss. A November 15 opening date will benefit the mink trapper but for the muskrat trapper if he chooses to trap, it will mean a loss. Fully aware of these and other situations, a Nov. 15 - Jan. 31 trapping season has been suggested. Counties like Wayne, Lenoir, Craven, Pamlico, and Carteret in the southeast might best be included under Dec. 1 - Jan. 31 trapping dates.

The hum of a bee is due to the very rapid vibration of the bee's wings.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Wildlife Resources Commission
Raleigh, North Carolina

Gentlemen:

Can you tell me how to prepare carp so Joe will eat it?

Yours truly,

Mary Doaks

Dear Mary,

We can tell you how to prepare carp so it's mighty good, and fit for anybody's dinner table. Whether Joe will eat it or not—that is something else again. You see, Mary, your husband is just like a lot of other fishermen. They make up their minds that bream and trout and bass are the only fresh-water fish that are fit to eat, and they refuse to give any others a fair trial.

There are any number of people who will assure you that carp are not fit to eat because of the muddy flavor; yet if you ask them about it, and if they tell you the truth, most of them will admit that they never tasted a carp. Prejudice is a difficult thing to overcome, Mary, so why not get one of Joe's friends to get you a carp and tell Joe nothing about it. Better yet, catch it yourself and then you can make such that it is handled right from the time it is caught.

The greatest damage that can be done to the flavor of any fish is done within the first few hours after it is caught. Like any other animal that is to be eaten, a fish should be bled thoroughly, and this cannot be done after it has been dead for half a day. It is desirable to keep a fish alive as long as possible after it is caught, but dead fish should not be allowed to soak for hours on a stringer hanging in the water, nor lie in the bottom of a boat indefinitely while the fisherman waits for the next one to bite. Any fish that is to be eaten should be killed with a sharp blow on the head with a hard object. The gills should be removed and the belly cavity should be emptied immediately. All blood should be thoroughly rinsed out. The viscera and gills are the first parts of a fish to spoil after it dies, and failure to remove them immediately may be the source of bad flavors when the fish is eaten. If you will recall how Joe kills and bleeds and cleans the hogs in the fall, you will realize how similar and how reasonable this procedure is.

Now let's consider this muddy flavor that carp are supposed to have. Unless it is properly prepared, any fish that spends its life in a shallow, weedy, muddy pond may have a muddy flavor when it is cooked. This is particularly true of carp, which seem to prefer such a place to live, and equally true of bass when taken from such waters. Most fishermen will ignore the muddy flavor in bass, simply because it is a BASS and they know it just must be good; but when a carp has the same flavor—Phooey!

When we were kids, we used to catch carp and put them in a big tub of fresh water for three or four days before they were killed. This seemed to do a good job of removing any muddy flavor from the meat. However, it seems that the source of most of this muddy flavor is in the skin. It can be eliminated in most cases simply by removing the outside skin along with the scales when the fish is cleaned, and by completely removing the peritoneum which lines the belly cavity. It is a good practice to remove this thin layer of tissue-like skin from the abdominal cavity of any fish at the time the viscera are cleaned out, but is especially important with bass and carp. When the outer and inner skins have been completely removed, the muddy flavor seems to go with them and only sweet-flavored meat remains. Of course, you can get the same result by filleting the fish, if you will follow the instructions we published in the April, 1951 issue of *Wildlife in North Carolina.*

You will find that carp meat is flaky and rather dry, much like the haddock fillets you buy at the frozen food locker. Because it is quite dry, the fillets should be cut thin so they will cook quickly and not be further dried out in the frying pan. Make them only about a quarter-inch thick, fry them in bacon fat or vegetable shortening for twenty minutes, and dinner is ready!

It does not require any special recipe for cooking carp. Just cook them the same as any other fish, without any fancy spices or condiments. Here is a simple recipe for frying carp or any other fish Joe may bring home. Mix one-half cup of all-purpose flour with one-half cup of fine corn meal, one-fourth teaspoon of pepper, and two teaspoons of salt. Roll the fillets in this mixture and they

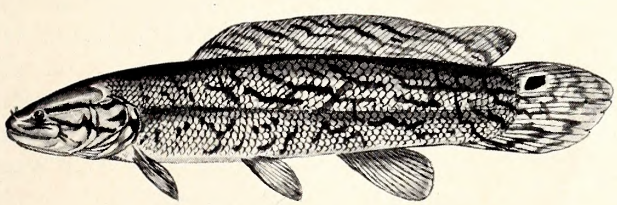
are ready for the pan. Melt three tablespoons of fat in the frying pan and fry the fillets on both sides until they are done. You will want lemon with yours and Joe will prefer his without it. That's a matter of personal taste. Either way, it will be good!

In order to get Joe to give it a fair trial, you might serve it without telling him what it is. Just mention that the grocery store was having a special sale on haddock fillets and let it go at that. When he admits that you have prepared a mighty fine dinner, that will be time enough to let him in on the secret. Of course he will snort a little and claim that you tricked him, but that's what it takes. Then if you will point out to him that a ten pound carp will really give him a fit on his bass tackle, and that he probably can't land even a five pound one on his fly rod without putting a set in it, you can be assured of many fine fish dinners in the years to come. But most important of all, Mary, be sure to impress on Joe that the proper killing and cleaning of any fish has more to do with its flavor than anything you can do to it after he brings it home.

Sincerely,

Harry Cornell

WANTED FOR MURDER



GRINDLE *(Amia calva)*—*alias*

Blackfish, Dogfish, Bowfin, and *Canadian Pike!*

by Duane Raver

Fisheries Investigator

THE GRINDLE (pronounced "grin'le" in most localities) is not a new fish to the fishermen of North Carolina—they have been cussing and discussing him down east for years. He's a hangover from a forgotten prehistoric age and this "living fossil" actually has no business among modern fishes. But he's here and is firmly entrenched in most of the rivers from Currituck to Brunswick counties and in some of the waters of the eastern Piedmont. Once you see this fish, you won't forget him—and if you have ever hooked one on casting tackle or a flyrod, you're probably still talking about it.

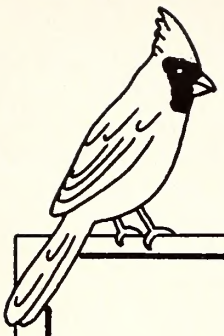
The sketch above will point out the characteristics to look for in identifying the grindle. Notice the long fin that arches over most of the length of the back of the fish. The tail is almost unique with its rounded shape and single lobe. The adult males have a conspicuous dark spot at the base of the tail which is very prominent during the spring. Almost the entire front of the grindle opens up when he opens his mouth and needle-like teeth are arranged in many rows on both the upper and lower jaw.

No records are available as to the maximum weight of the grindle, but ten pounds is considered "big." More often they range from a pound and one-half to four or five pounds.

The scales are tough and almost armor-like on the back. And the scales are just about useless for age determination for some reason; so little is known about the grindle's growth rates.

But why is the grindle wanted for murder? Well, from a study of 131 stomachs of this critter comes part of the answer: 59.7 per cent of the diet of the grindle is game fish and 16.6 per cent is forage fish that otherwise would go to bass. He's fast and clever and eats more than his share. No one argues about the fighting qualities of this fish after he is hooked, but try and eat the meat after it is cooked! The grindle is a poor quality food fish to say the least. He's a rough fish and must be controlled in our game fish waters.

Fortunately, most of the waters of the central and western part of North Carolina do not have the grindle. But—and this will surprise a lot of sport fishermen—some pond owners are shipping the grindle into North Carolina from as far away as Canada and stocking them in ponds. Some of these ponds worked out fairly well and the grindle is providing fishing of a sort. In other ponds the grindle is eating everything in sight, including carp, bass, bream, and assorted tackle; and fishing has been disrupted, if not ruined. The pond owners in this latter case want to drain the grindle-infested ponds and start over—with something else besides grindle. And here's where the difficulty lies: the draining of these ponds may very well establish the grindle in public fishing waters of central and western North Carolina. We don't want this to happen! Actually there is very little we of the Wildlife Resources Commission can do about the importing of the grindle into the state. We do, however, plead with pond owners *not* to buy the grindle and ship them into North Carolina, and *not* to release the grindle already here into public waters. Let's stop this murderer now!



BIRD SANCTUARY
1951

by Lunette Barber

Wildlife Education Representative

While driving through North Carolina and entering towns and villages, and a few private estates, signs can be seen that have been erected at some of the limits, which read: BIRD SANCTUARY, usually with a date underneath which tells when the sanctuary was established. It would really be interesting to know what comes to the mind of the traveler who reads these signs.

Does the word "sanctuary" mean anything to you? Webster says, "Sanctuary—a place of refuge for birds, or for game or other animals, where predatory animals are controlled and hunting is not allowed; as a *bird sanctuary;* a *game sanctuary. Sanctuary* and *refuge* are sometimes distinguished, the former being applied to a place where all forms of wildlife are equally protected, the latter to a place where predaceous birds and animals are controlled for the protection of more desirable forms of wildlife, as game and insectivorous birds."

If Webster's definition is accepted then each individual where a sanctuary has been established has a responsibility. First how important is it to protect the birds? There are two definite reasons: the *economic value* and the *aesthetic value*. Some one may say, "The birds are not important to me. That is just songbird stuff." The research experts, the outstanding conservationists, and ornithologists do not hestitate to agree that the birds are among our most valuable creatures. Then they and most people, generally speaking, are agreed that nothing adds as much beauty, interest and entertainment as the birds.

An interested individual may ask, "What can I do to really make my town or village a real sanctuary after it has been established as a bird sanctuary?" The very first thing to do is to begin learning about the birds. No one can ever know all about them, but the interest is endless and it can grow and grow. How many birds do you know; how many are found in your community; which eat seeds; which eat insects, or both? We could go on and on with questions. While the learning is taking place, worth-while activities and projects can be carried out. In late spring, build bird baths and erect them; in late fall when the insects have disappeared and cold weather begins, erect feeding stations and begin feeding the birds, and once feeding is begun, keep it up. The birds will depend on you. Also shrubbery and plants that produce seeds and berries for them may be put out. In early spring erect properly built homes, and properly built homes mean just what it says. Never build one unless it is certain that plans are correct.

After the birds have been invited by erecting baths, feeders, and homes, the most important job then is to see that they are fully protected. The birds are not free; they have no money with which to buy food and shelter; they have to make a living for themselves and their young, and it is very unfair to them for their young to be eaten by cats, rats, and dogs. And then do not forget to discourage sling shot, air rifle, and .22 rifle activities that occur in so many towns and villages. The best way to discourage these activities is through an education program with the youth organizations and the public schools. The civic groups can do much to help make the community a *real sanctuary*. Contests may be sponsored, such as census, art, poem, essay, photograph, poster, exhibit, etc. Information may be secured through local libraries, bookmobiles, state and Federal agencies, national organizations such as the National Audubon Society, and resource-use people. By promoting a program to create enough interest to make a real sanctuary, the interest will lead to further study for learning and practicing conservation of our natural resources because the birds, as well as the other creatures on the earth, including man, depend upon the soil, water, and forests. Also when the need for conservation is realized and put into practice, better citizens, sportsmen, and sportswomen will be made.

Since North Carolina is one of the few, if not the only state, that has the distinction of erecting BIRD SANCTUARY signs, each citizen should be proud enough to do his best to make the town or village a real sanctuary not in sign only but also in deeds.

Fishermen in the Great Smoky Mountains National Park caught an average of five fish per man day during the 1950 season.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

Conducted by Win Donat

Coon Hunters—Attention!

HAVE YOU EVER STOOD ON A BUSY STREET CORNER trying to give away a dollar bill? It's not as easy as you may think, believe me. Even when some have proved that the money will spend, others will be hesitant about taking the offering. This must be the case with Tar Heel coon hunters. Several times in the past we have carried requests directed to the officers of the various groups throughout the state, in an effort to learn how many such groups there were, where they are located and whether or not they would be interested in a state-wide coon dog trial. The Wildlife Commission and the Wildlife Federation are cooperating in the stimulation of trials for every major dog group and have had several meetings. Members of the Fox Hunters' Association, Beagle Association, and several bird dog groups are working together to form a trial association which will run championship contests. In fact, trials are planned for the fall, from which the top North Carolina fox hound and beagles will be picked. The idea must be good and have a certain amount of appeal to attract so many divergent interests, yet the coon hunters are consistently absent from the planning meetings that have been held in the past.

If there is no coon hunter association in North Carolina, one should exist, and we will help to form it. If an association exists but needs help, we would like to know that too. We want to know of every group interested in coon hounds, coon dog trials and coon hunting. Who will help us to get such a list started? It is worth more than the dollar mentioned at the beginning of this article. Send a card or note to Win Donat, Box 2919, Raleigh, and please do it now.

W.D.

From Mr. John D. Plott, Waynesville, N. C., the following:

"I would like to get the information on organizing a hunting club and the requirements so we can put in for hunts in National Forests where bear hunts are drawn.

"We have started organizing and have elected officers and would like to have any information or requirements you could furnish . . ."

Mr. Plott's letter indicates a probable misunderstanding which may exist in the minds of others who are interested in hunting in the National Forests and other managed hunt areas. It is not necessary to form a group in order to hunt. By group I mean an organization. Generally, the rules have required that every group choose a leader through whom the arrangements are made. The hunt and drawing rules vary from year to year, and those for the coming season have not as yet been published.

It is necessary, however, to be a member of a hunting party headed by a leader who owns and uses bona fide bear dogs in order to participate in bear hunts on the Santeetlah and Standing Indian areas. Last year there was one week of still hunting in which individuals could still hunt without the dog and party requirements. This plan may be repeated this year.

The national organization of "Friends of the Land" is primarily interested in the conservation of our soil resources. The report of the visit of the chapter at Greensboro to a wildlife conservation demonstration area follows:

"The 'Friends of the Land' Chapter in Greensboro is the only local chapter in North Carolina. The charter was officially presented to the organization in 1948 by Louis Bromfield, noted author and Vice-President of the National Friends of the Land. The purpose of the organization is to make our citizens aware of our dwindling natural resources and to do something about the conservation, restoration, and protection of these resources.

"More than fifty members of the 'Friends of the Land' made one of their regularly scheduled field trips recently where they were tremendously impressed with a neighborhood wildlife improvement project. This project was undertaken in the early spring of 1949 when several farmers became interested in a joint effort to improve conditions for game on their farms. After some of them had discussed the proposal with the local Soil Conservationist and Mr. A. C. Davis had contacted the N. C. Wildlife Resources

Commission, the local Soil Conservationist and the Game Biologist from the Commission walked over the farms with the following interested farmers: A. C. Davis, G. T. Wilson, J. C. Carter, Marvin Truett, C. W. Vernon, and C. C. Pearman. These farms, the total acreage of which is approximately 900, lie between Haw River and Myers Fork Creek.

"Seventeen plantings of lespedeza bicolor for food, and sericea where needed for cover, were located according to land capability around field borders on idle areas or sparsely wooded areas. One 1200-foot planting site of multiflora rose was selected. The rose planting was made parallel to a terrace where the land capability class changed. The land above the living fence was to continue as crop land, the land below to be retired to pasture. The Soil Conservationist was interested in the contour fence, the Game Biologist in the protection for wildlife, and the farmer in both, plus a living fence.

"The Wildlife Commission furnished the planting stock. The neighbors teamed up and fertilized and planted the lespedeza and rose.

"Some additional plantings of bicolor were made in 1950, and an annual mixture of annual seed sown, which were furnished by the Commission.

"While 'Friends of the Land' were on the tour they saw bicolor six to seven feet tall holding some seed, indicating a supply of bird food during the late winter, a good mulch of leaves on the ground, and where rabbits had fed on the bark. The rose had made good growth and will turn livestock now or unquestionably by the end of this growing season. The area adjacent to the rose will be seeded to pasture this fall. The group was more impressed when Mr. Davis reported that he now has seven or eight coveys of quail on his 225-acre farm.

"This successful neighborhood project is expected to serve as a model for other farmers in the county. Great interest has already been shown in the progress of the cooperative venture."

Plantings for game such as those described have proven their worth. You, too, may have better hunting on your land. See your district biologist or wildlife protector now for applications. Plans are being made to deliver materials earlier this fall.

Wildlife Protector H. R. McLean of Hoke County, sends the following information which should be of value to farmers in many areas:

"The FARMERS DIGEST, April issue, carries an interesting article on a new repellent against the ravaging deer. This product, known as 'Good-rite Z.I.P.,' has proven, in protecting crops from deer, that no damage is done to either. Technicians of the B. F. Goodrich Company developed the product, which comes in the form of a paste and is mixed one pint to two and one-half gallons of water for spraying during the dormant season. They recommend that one-half the paste be used during the growing season. Usually one spraying will last for the season. 'Rains will not wash it away and winds will not blow it off!'

"Notation: Reprinted by permission from POPULAR GARDENING, 141 East 44th Street, New York, New York, November-December, 1950.

"It will not be long before complaints will be made from damages being done by deer, and I would like very much to see an article appear in the WILDLIFE magazine in regard to this. If you would like more information on the subject, I will be glad to forward the DIGEST to you, if one is not available."

Any protector who is alert to and interested in the problems concerning fish and game and exploits every opportunity to aid in their solution is going a long way in the building of good will and advancing the conservation program.

Shooting Laws Vary

RESTRICTIVE SHOOTING LAWS WILL NOT entirely eliminate hunting accidents, but some measures directed toward that end have undoubtedly made substantial contributions to the safety of hunters, individual and collective.

Many state game and fish departments now annually sponsor safe gun handling campaigns, with the wardens conducting classes among adult and junior sportsmen alike. These efforts are making very definite headway in the decrease of hunting accidents in these particular states. Shooting laws are not uniform throughout the country and sportsmen will do well to carefully study those of their home states and any states they expect to visit. These are some of the variations as contained in a recent article in "South Dakota Conservation Digest":

Six states prohibit hunting from or shooting over a highway. In Maryland you cannot shoot within 100 yards of a highway. In Delaware and Mississippi it is illegal to hunt game when the ground is covered with snow. Three states make it unlawful to shoot from a boat. Several states prohibit the carrying of firearms in an automobile unless they are unloaded and taken down or securely cased.

At least four states make it unlawful to hunt on Sundays and in Massachusetts and New Jersey, it is illegal to use a rifle in hunting deer. In Louisiana you cannot hunt from a deer camp for more than three days. In several states it is unlawful to carry a shotgun afield between July 1 and the opening of the hunting season. At least five states provide penalties for hunting while under the influence of intoxicating liquor.

ANSWERS TO BACK COVER QUIZ

I. Duck, mallard drake. 2. Woodcock. 3. Common Mole. 4. Opossum. 5. Flicker or yellow-hammer. 6. Beaver, right hind foot. 7. Muskrat.

Slide Started Fish To Market

Story and Pictures By Don Hall

Reprinted from the Roanoke Rapids Daily Herald

A FISH SLIDE that was perhaps one of the oldest and most productive in eastern North Carolina was captured and destroyed on Sunday, April 29.

Located in a treacherous portion of the rocky rapids on the Roanoke River, 2 miles above Roanoke Rapids, the slide has operated for something like 40 years in or near the same location.

Game officials, led by District Wildlife Protection Supervisor C. N. Woolard, captured the slide at 6 a. m., just as the operator of the slide, Ruffin Scott, was bringing 100 pounds of fish up from the river to waiting customers.

Scott, a 49-year-old Northampton county farmer, said that he had helped his father work the slide when he was ten years of age. As far as he knew, this was the first time the slide had ever been found by game officials.

The slide was cleverly concealed between some small islands in the river, and was totally invisible from the banks of the river. The river is so rocky and dangerous at this point that few boatmen had ever come near the slide.

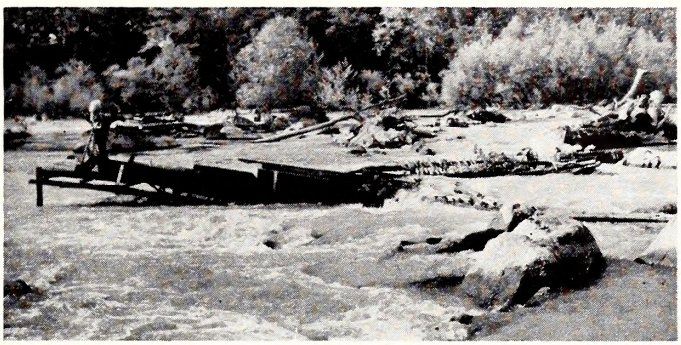
Fish confiscated in the illegal haul included walleyed pike, catfish, jack, mullets and horsefish. The walleye and jack are game fish.

Game officials had known for years that this slide was being operated, but just couldn't seem to locate it. The trick was finally turned by a Wildlife Resources plane, which patroled low over the river until the slide was sighted.

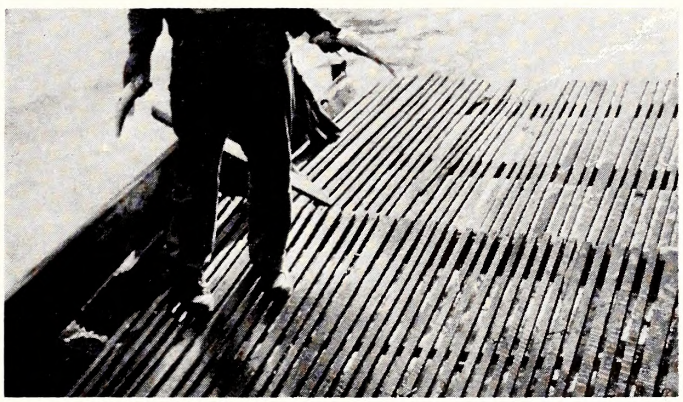
Scott admitted to officers that he had seen the plane flying over the river, and had felt they might have found the slide. In fact, Scott was very cooperative with the officers, using his boat to take them out to the slide, and volunteering some of the information appearing in this article. Scott will face charges in Northampton County Recorder's Court.

Some years when the waters of the river rose high in the spring, Scott said he had taken some nice rockfish from the slide. One year, he caught a rock weighing around 50 pounds.

Officers participating in the raid were: C. N. Woolard, Wildlife Protection Supervisor; James Buffaloe, Inspector of the Department of Conservation and Development; C. M. Pettitt, Halifax County Wildlife Protector; N. B. Hughes, Northamption County Wildlife Protector; Russell Shoulders, Gaston Chief of Police; and Bob Hester, Nash County Wildlife Protector.



The fish slide was constructed in a rugged portion of the Roanoke river. To the right, formations of rock make a natural funnel, causing the water and fish to converge on the slide. Notice the scarecrow on the downstream end. Its purpose was to keep crows and hawks from feeding on trapped fish.



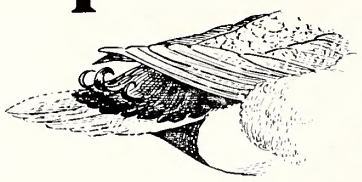
The floor of the slide consisted of a series of slats and open spaces. The river traveled at a swift rate where it passed through the slide. Thus fish were thrown high up on the slide and trapped. These two fish were tossed aboard during the short time officers inspected the slide construction. Because of flood waters and rotting planks, the operation of the slide required much maintenance work.

Chopping up the slide. Scott and his young son used pole axes to cut the slide loose by order of wildlife protectors. It was a risky job to work from a narrow boat in swift water. The fish slide was discovered by protectors patroling the river in a Wildlife Resources Commission plane.

A TARHEEL WILDLIFE QUIZ

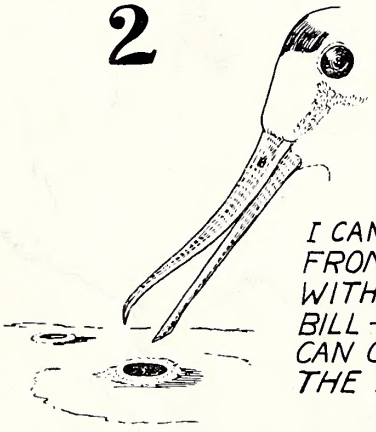
BY THESE YOU SHOULD KNOW THEM

1



I AM THE ONLY ONE OF MY KIND THAT HAS CURLED TAIL FEATHERS

2



I CAN PULL WORMS FROM DEEP MUD WITH MY LONG BILL - NOTE HOW I CAN CONTROL THE TIP

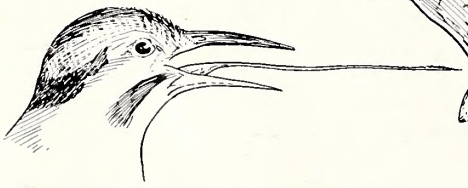
3

MY FRONT FOOT IS MUCH LARGER THAN MY HIND FOOT

4

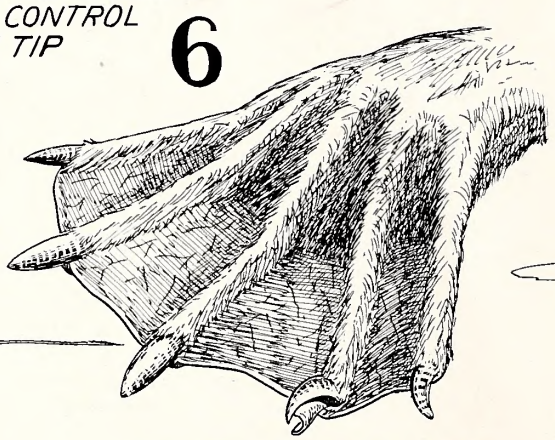
I AM THE ONLY TARHEEL ANIMAL THAT CAN HANG BY ITS TAIL

5



MY LONG BARBED STICKY TONGUE PULLS ANTS BY THE THOUSANDS OUT OF THEIR HILLS

6



THIS IS ONE OF MY HIND FEET - NOTICE HOW ONE NAIL IS FORMED INTO A COMB FOR MY FUR

7

MY FLATTENED TAIL SERVES AS A RUDDER WHEN I AM SWIMMING

Win Donat

Answers May Be Found On Page 22

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Photo by Jack Dermid

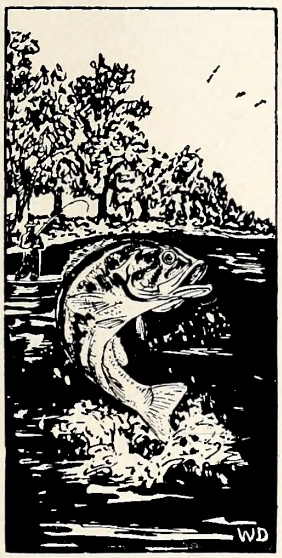
Paternal Care

Male mourning doves share the duties of family life with the females. Here one is shown feeding its youngster by regurgitating a mixture of "pigeon milk" and partly digested food. North Carolina has a split hunting season for doves in 1951-52: September 15 through 29 and January 1 through 15. The bag limit, daily or possession, is eight birds.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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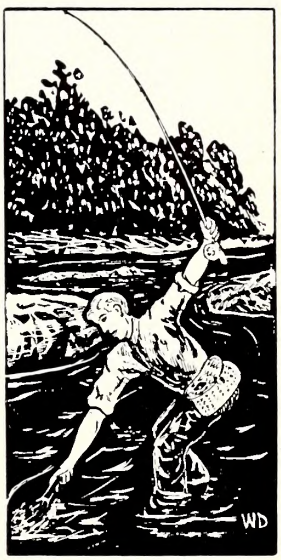

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Win Donat ..... *Art Editor*
Marty Mabry ..... *Circulation*

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COVER

Snowy egret by Win Donat. Once nearly exterminated by plume hunters, egrets have made a remarkable recovery with protection—a success story in conservation.

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

Entered as second class matter at the Post Office at Raleigh, North Carolina, Feb. 23, 1948, under the act of Aug. 24, 1912. Additional mailing entry at Charlotte, N. C., 214 West Morehead St.

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The female dove (banded bird above) typically incubates the eggs and broods the young during the night and early morning while the male takes over during the day. These doves chose to use an old robin's nest instead of building their own. Doves generally build very flimsy nests, and many are destroyed during severe storms.

LET'S LEARN *About Our Wildlife*

The Thirty-Second of a Series on The Wildlife Species of North Carolina

The Mourning Dove

by Rod Amundson

Photos by Jack Dermid

FROM MORNING TO NIGHT, from March to September, North Carolina farmers, surburbanites and residents of small towns enjoy the melodic cooing of a bird which is both a target for gunners and a joy to bird lovers. The mourning dove holds the distinction of being the only game bird which breeds in all of the forty-eight states.

In most northern states it is classed as a songbird and protected as such. In the remainder of the country, however, it is designated a migratory game bird, and is protected by both state and federal law. It is a handsome bird with a beautiful call, and one which has caused a great amount of controversy.

History

Although it is doubtful that mourning doves (sometimes called turtle doves) ever reach the amazing numbers once attained by the now extinct passenger pigeon, there is no doubt that they were once far more numerous than they are today. To some extent agriculture has had a depressive effect on mourning dove numbers, but heavy shooting has probably been the greatest detrimental force to the species.

Because of their migratory nature, mourning doves are classified as migratory game birds and are now afforded international protection by treaties with Great Britain, Canada (1916) and Mexico (1937).

Very little has been done anywhere with regard to active programs of restoring dove populations through habitat improvement, and only in recent years have intensive studies of mourning dove problems been undertaken. Ten southeastern states have formed a cooperative dove study program to find out why dove populations have been falling off, and to find out what

might be done to increase them. More recently a disease broke out among doves which further complicated the picture. There is little danger that doves might follow the passenger pigeon into oblivion, but at the present writing the problem is a serious one, both to those who shoot them and those who enjoy the songs of these birds as well as those charged with the responsibility for protecting them.

Characteristics

Mourning doves somewhat resemble the extinct passenger pigeon in appearance, and are still confused with these birds by mistaken observers. Sexes are similar except that the females average slightly smaller than the males and are of a more dull color. They are swift of flight, rising from the ground or a perch with an erratic motion and moving as fast as sixty miles per hour on short flights. The rapid and erratic flight makes them sporting targets for the dove hunter.

The most common name for the bird comes from the dolorous sound of the mating call. It is a soft "Coo-oh! Coo! Coo! Coo!" which is sounded by both males and females during the nesting season. Despite the soft tones, the call can be heard for a surprising distance on a still morning. It may be heard rarely on brightly moonlit nights.

Although classified as migratory birds, the migration of mourning doves is somewhat an indifferent matter. Individual birds may spend the winter in their nesting grounds, or travel from Canada to the Deep South in a single season. Although studies are being made of their migratory habits, relatively little has yet been learned of the true story.

Breeding

The breeding habits of mourning doves have made them an easy object for students of wildlife to study. Very little of the family life of mourning doves is yet to be learned compared to such mysterious species as the whooping crane and certain other water birds. Mourning doves build their nests in almost any place which happens to strike their fancy. These places may include under the eaves of a porch in the city, on the ground, in a yucca plant, or the crest of a loblolly pine tree eighty feet above the ground. Most nests occur between five and twenty-five feet above the ground.

The nest itself is a completely haphazard collection of small twigs hopefully perched in the fork of a branch or on any other platform deemed suitable by the nesting birds.

Although doves are associated with peace, courtship among mourning doves can be an extremely stormy affair when two males aspire for the favor of a single female. They engage in furious duels although neither may be seriously damaged. During the courtship period the male struts, fluffs his feathers, gurgles, coos, and takes off in wild show-off flights. Once the nuptial relationship has been established, however, the family life of mourning doves is an example of felicity.

The male mourning dove plays an important role in the family life. He helps to build the nest, such as it is, or agrees to take over an abandoned robin or sparrow nest. When the snow white eggs (almost invariably two) are laid in the nest, the male shares the task of incubating them. The female usually takes the night and early morning shift, and the male takes over during the daytime hours. Sometimes both birds leave the eggs untended for considerable periods of time, but generally the brooding is constant until the eggs hatch. The brooding period lasts a few hours more than fourteen days.

Like most young birds, young doves are homely, scraggly, almost naked at hatching. For several days after hatching the fledglings are kept dry by the brooding parents. They grow very rapidly, however, and are soon too large to be completely covered by sheltering feathers. Like all other young birds, they seem to be constantly clamoring for food. Both parents take part in the feeding.

Many people consider "pigeon milk" to be in the same category as lumber stretchers or striped paint. Such an element actually exists. In the crops of both parent birds are glands which produce a milky substance which provides part of the food for young doves. The manner of feeding is unique: at feeding time either parent may come to the nest and open its mouth so that the youngsters can thrust their hungry beaks down its throat to feed on a mixture of pigeon milk and partly digested food. The entire process takes from a few seconds to almost a minute, and there is considerable weaving and squirming as the food is transferred from one bird to the other. Two young birds have been observed feeding at the same time, although this is not the general rule.

Within two weeks to eighteen days the youngsters are completely feathered and ready to fly. In the South where the breeding season is long, the first pair of young may take mates and produce a brood of their own before the mating season ends. Meanwhile the parent birds

The mourning dove is the only game bird which breeds in all of the forty-eight states.

The usual clutch for doves consists of two pure white eggs. This nest was placed in the fork of a yucca near Beaufort.

build or appropriate another nest, and bring forth as many broods as the length of the season and mortality factors will allow.

Observers in northern states believe that as soon as the young doves are old enough to fly they begin a slow migration southward. This may be a clue to why doves are so scarce in the northern end of the zone of hunting seasons when the season finally opens.

Food Habits

Doves are ground feeders and are fond of grain. Dove hunters have learned of their fondness for grain, and look for them around grain fields during the hunting season. Further, a fondness for wheat, oats, millet, rye, and other grains makes doves vulnerable to baiting. This susceptibility has brought about stringent laws against baiting doves.

In addition to grain, doves feed heavily on weed seeds and insects. For this reason they are extremely important to agriculture in controlling weeds and harmful insect pests. Although it has been pointed out that doves favor grain, waste and field grain is available during only a short period of the year. During the remainder of the year they depend mainly on weed seeds with a supplemental ration and insects.

Besides the variety of grains, weed seeds, insects and worms, dove must have access to gravel for the purpose of grinding food in their gizards. Their water requirements are high, and they must have daily portions of water from ponds or streams. Often on a late summer afternoon doves may be seen by the hundreds flying to the edge of a pond to drink.

Enemies

Because of the haphazard manner in which doves build their nests, they are in a sense one of their own worst enemies. A fragile stack of twigs in the fork of a tree branch is not a good protection against sudden summer windstorms which may blow nest, eggs, nestlings and all to the ground.

All too often dove nests are located in plain sight of predators and small boys. Frequently adventurous young birds wander too near the edge of the nest and fall to the ground.

Low nests are vulnerable to snakes, and higher ones fall prey to squirrels, bluejays, and other predators.

During the spring and summer of 1950 an outbreak of disease occured among doves in the eastern part of the United States and spread rapidly throughout the southeastern states. By summer's end no complete evaluation of the extent or effect of the disease was known, but it is certain that many birds succumbed to the infection. A number of diseases infect mourning doves, but serious outbreaks are rare.

Doves are inflicted with the usual avian parasites, but well-fed, healthy birds seldom suffer important damage from either internal or external parasites.

Migration and Management

As has been pointed out, much is yet to be learned regarding the migration of mourning doves. For a number of years doves have been captured, banded, and released again, but only a few of the bands have been returned. It is known that doves nest as far north as Canada, and cannot winter farther north than Southern Pennsylvania, except in occasions of unusually mild winter weather. Once a dove, a bluejay, and a robin spent a winter together in a corncrib in Northwest Iowa, but it is rare indeed that a dove would spend a winter so far north. As to the extreme of migration, it is likely that some birds make the trek from Canada to Florida, for example, but in general the migration is less distant. Undoubtedly late summer broods begin their southward trip as soon as they can fly. In North Carolina most of the birds have gone south by the end of September, but they begin to return in late December. Some undoubtedly remain all winter, but most winter doves found in the Tar Heel state are probably those which have come in from farther north.

A cooperative dove study being conducted among

• CONTINUED ON PAGE 21 •

Baby doves are ugly and helpless, but they grow rapidly. Within two weeks to eighteen days, they are completely feathered and ready to fly.

The Value Of Wildlife To Me And My Community

by Bobby Cooper

***Wildlife* is proud to publish the prize winning essay in the state-wide high school essay contest conducted last spring by the North Carolina Wildlife Federation and the Wildlife Resources Commission. The seventeen-year-old author lives on a farm, is very interested in wildlife, and graduated from Central High School in Elizabeth City last June. Read the essay. It proves that young sportsmen are doing some sound thinking.**

JUST AS SOIL IS OUR HERITAGE so likewise is wildlife. Ever since creation wildlife has played an important part in man's activities and existence. When the English colonists first reached the shores of America they found virgin forests inhabited by all forms of wildlife. Numerous species of birds and animals lived in the forests and obtained their food from the forests. Chief among these were the deer, bear, opossum, raccoon, squirrel, grouse and wild turkey which depended on the forests as a place to raise their young and as a source of food. These creatures were in turn hunted and trapped to provide food and clothes. In fact, it may be said that our nation might have failed to live in its early days if it had not been for the abundance of wild animals and birds which provided a principal source of food, clothes, and income for our ancestors. Out of these virgin forests the early pioneer hewed homes for his family and fields for his crops. Yes, wildlife meant much to the community of yesterday; much more than it does to us today, but its importance cannot be measured today by its actual value in dollars and cents.

Fast diminishing forests gave way to barren hills where wildlife without its natural cover could not survive. Man's uses of the lands, forests, and waters became more intense, and, coupled with his greed and wrong belief that there always would be enough, there began a wasteful period of activity in which serious damage has been done to wildlife until few of the valuable species remained.

One of the values which wildlife has for me and my community is that by conserving it we also conserve many other valuable resources. It may easily be seen that there is a relationship between all resources, each depending on the other to a greater or lesser degree for existence.

Thousands of acres of North Carolina timberland are burned each year by careless people. Fire is perhaps one of the most disastrous abuses of our forests because it not only kills the trees and wildlife but destroys the water control properties of the forest. The rains fall directly to the bare ground without the interruption of the trees and foliage. The results are inevitable, resulting in destruction of land, building, herds and flocks, crops, income and much of our wildlife. The Roanoke

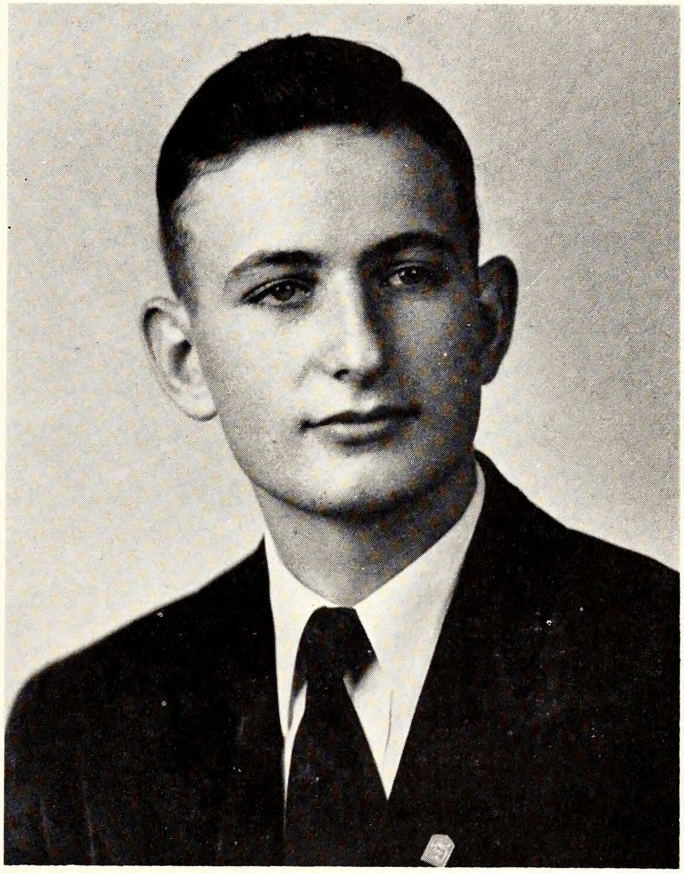


Photo by Frisbys Studio

First Prize Winner, Bobby Cooper

River bottom acres, for instance, which are densely wooded and quite often flooded are the homes of one of our greatest wild turkey populations. These great birds nest on the ground and the young birds are extremely vulnerable to moisture. Among the effects of forest fire previously mentioned, there is one that is not apparent and that is the destruction of certain species of fish. The Western North Carolina mountain section has been popular with sportsmen who come to that area to fish for trout. These sportsmen bring much revenue into the mountain areas, thereby benefitting the people who serve them. Trout are excellent game fish and live only in clear, cold, swift mountain streams. When the forest cover which shades these streams is destroyed the temperature of the water is raised by exposure by

• CONTINUED ON PAGE 22 •

HOW *Fast* ARE NORTH CAROLINA BASS *Growing . . .* AND *Why ?*

by Duane Raver
Fisheries Investigator

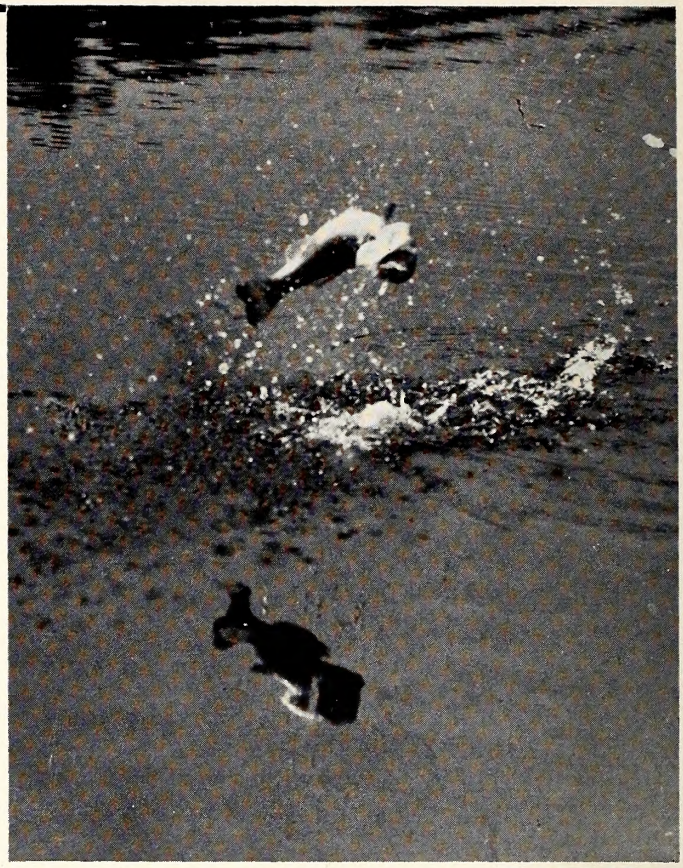


Photo by Jack Dermid
Fighting bass provide keen sport and many fishing thrills for the angler.

MANY PEOPLE ARE OFTEN QUITE SURPRISED to learn that the age of fish can be determined from an examination of the fish's scales. That is exactly what is done, however, and the method was used in arriving at the information in this article. Suffice to say that by counting the growth rings on scales with the aid of a microscope, we can quite easily tell whether the fish is one, two, three or more years old. We must know the length of the fish under examination so that we can correlate the age with the length.

The growth rate of fish; i.e., how much the fish grow per year, is an important index to the quality and productivity of a pond or lake. We can tell whether the fish population is too crowded or if the water could support more fish; whether the food supply is sufficient and being utilized, and whether the fish being studied are mature.

During the summer of 1950, in connection with the Wildlife Resources Commission's lake survey work, scale samples were taken from over 600 fish, including 142 largemouth bass. These bass, ranging from less than five inches in length to a maximum of 27 inches, were aged and the growth rates compared from lake to lake.

A little study of Fig. 1 will show that the best growth rate found was in the Roxboro City Reservoir. It should be mentioned that this is not necessarily the best growth rate in the state—only the best of the fifteen lakes checked. Notice that bass here reached the legal length of ten inches in about fourteen months. This growth rate is better than that reported for Norris Reservoir in Tennessee, and considerably better than those reported from Michigan and Indiana. Even the average growth rate for the fifteen lakes studied was quite high and above that for the North Central states. This is to be expected when we consider the primary factors upon which growth depends. These would include availability (and quality) of food, water temperature, and length of growing season. Secondary and important influencing factors include clarity of water and population densities. It is easily understood that in the latitude of North Carolina, higher average water temperature and longer growing seasons exist than in the North Central states.

Still referring to Fig. 1, notice the lower line labeled "Cascade Lake." This represents the poorest growth rate found. We find that here in this mountain lake, largemouth bass reach the ten inch mark at the beginning of their fourth year, and very, very few bass go beyond 14½ inches.

The dotted line in Fig. 1 represents the average growth rate for the fifteen lakes studied. It takes sixteen months for bass to reach ten inches in the "average lake" of the state.

If we listed the lakes studied in order, with the best growth first, it would look like this: Roxboro City Lake, High Rock Lake, Lake Hickory, Badin Lake, Lake Catawba, University Lake, Mountain Island Lake, Lake Ellis, Ledbetter's Lake, Creedmore City Lake, Lake Tillery, Blewett Falls Lake, Lake Glenville, Lake Tahoma, Cascade Lake.

It is interesting to note that in considering all the lakes in two of the main river systems of the state, the Catawba system displays a better overall bass growth rate than that of the Yadkin system. The growth rates of bass in the smaller lakes in the Piedmont section fall between these two systems. Comparing the different

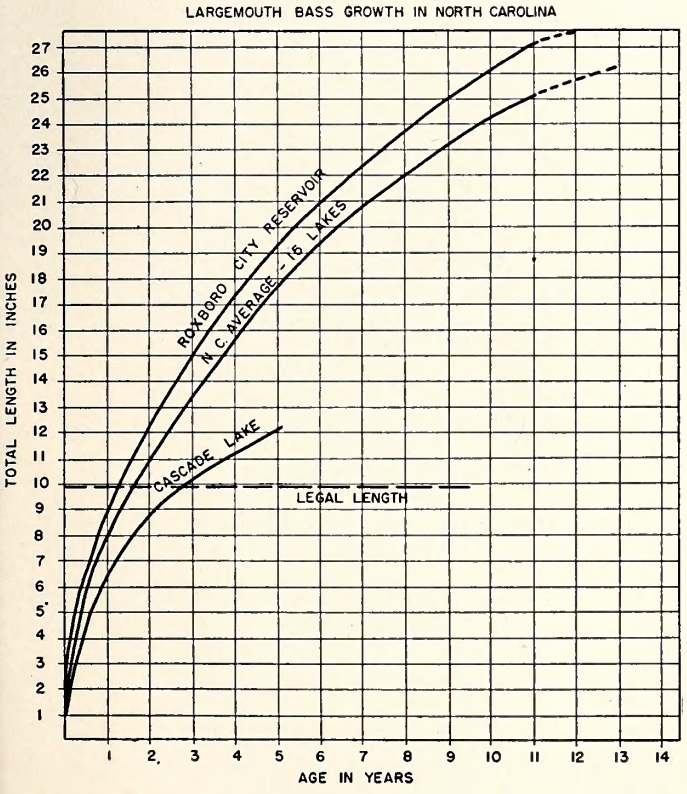
sections of the state further, we find the bass in the mountain section grow much more slowly than in the other areas, primarily because of the shorter annual growing seasons.

Looking at the river systems individually, we find that as we go down stream from lake to lake, the bass growth rates become progressively poorer. This is particularly noticeable in the Yadkin system where High Rock is given a second place rating; Badin, fourth; Tillery, tenth, and Blewett Falls, far down on the chain, eleventh.

The trend is the same in the Catawba, with Lake James (Hueske, 1947) high; Lake Hickory, medium, and Mountain Island and Catawba relatively low in bass growth.

Two obvious factors are contributing to these differences, and it is interesting to note that both factors

Figure 1



increase in intensity from the headwater lakes to the lower lakes in the chains: turbidity of the water, and densities of non-game fish population.

Food supplies for bass over 4 inches are adequate in all lakes concerned, so this is not a critical factor in causing material differences in the growth rates. However, to say that the food supply is adequate and to say it is available to the bass are certainly not one and the same. Here is where the factor of water turbidity enters in. Large numbers of gizzard shad and young bluegills and other sunfishes may be present, but if the water is turbid much of the time, the bass, which feed by sight, will be handicapped greatly in their feeding and, consequently, will not grow as rapidly as would be possible in clearer waters with the same amount of food present.

Any rough fish in game fish habitats are too many; however, it appears that excessive numbers must be present before they do any noticeable damage to the bottom food supplies. This bottom food is important to the young of almost all species of fish, including the bass. Bass and other species depend upon these bottom organisms during the early crucial stages of their lives. Future growth depends on the start these fish get in life.

A comparative correlation of these two factors, turbidity and rough fish populations, and the growth rate of bass was seen both on the Yadkin and Catawba systems. With the down-stream increase of both turbidity, including lengthened periods of severe turbidity, and greater rough fish population densities, the growth of bass declined.

The alleviation of the turbidity and decrease of rough fish populations will undoubtedly result in better growth rates in all species, including the bass. This does not say the fishing will materially improve; but on the basis of past records of other habitats, it *should* improve.

Turning briefly to the mountain lakes checked, we find a very different situation than that seen in the Piedmont reservoirs. Here turbidity is not a serious problem, and evidently does not influence the feeding of the fish. Food supplies are, for the most part, adequate for the largemouth. The growth limiting factor here is the water temperature. Cold water lowers metabolism of all species, including the largemouth bass. As a rule, the lower the average water temperature from the optimum, the slower is the growth in warm water species. This is very apparent in the mountain lakes, many of which are not suitable habitat for optimum largemouth bass growth.

In summation we can say that the bass are growing quite well in most lakes of the Piedmont section, and also in the upper impoundments of both the Yadkin and Catawba systems. In the mountain lakes, largemouth bass are growing relatively poorly due to low average water temperatures. The over-all state-wide bass growth rates are satisfactory, and exceed those reported by investigators in other sections of the country.

Length-Age Relationship in the Largemouth Bass in North Carolina

Length in inches at the end of each complete growing season

Year of Life	1	2	3	4	5	6	7	8	9	10	11	12
LAKE Age-Group	0	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
No. of Annuli	0	1	2	3	4	5	6	7	8	9	10	11
Roxboro City Lake	...	9.0	12.0	14.7	17.1	19.2	20.8	22.3	23.4	24.1	25.1	27.0
High Rock Lake	...	8.3	13.1	16.0	17.9	18.3	19.1	...	...	...	...	...
Lake Hickory	...	7.0	12.0	14.6	15.5	16.2	17.4	19.0	21.5	...	...	...
Badin Lake	...	6.9	12.0	15.0	17.0	...	...	...	...	...	...	...
Lake Catawba	...	8.5	12.2	13.7	14.9	...	...	...	...	...	...	...
University Lake	...	8.4	10.1	13.2	15.1	18.0	19.3	22.0	...	...	...	...
Mountain Island Lake	...	8.3	11.1	13.9	15.6	...	...	...	...	...	...	...
Lake Ellis	...	6.8	11.1	14.5	15.5	17.1	18.0	...	...	...	...	...
Ledhetter's Lake	...	7.1	10.0	12.0	14.7	19.0	20.7	22.0	24.0	...	...	...
Creedmoor City Lake	...	7.8	10.3	11.5	13.7	16.8	17.2	...	...	...	...	...
Lake Tillery	...	8.4	9.0	13.0	14.6	...	...	...	...	...	...	...
Blewett Falls Lake	...	5.7	8.7	10.0	12.6	...	...	...	...	...	...	...
Lake Glenville	...	5.6	7.9	10.0	12.5	13.7	...	...	...	...	...	...
Lake Tahoma	...	7.3	8.9	10.6	12.0	13.0	...	...	...	...	...	...
Cascade Lake	...	6.7	8.3	9.5	10.7	12.0	...	...	...	...	...	...
North Carolina Average	...	8.0	10.8	12.7	15.0	16.9	19.0	20.7	22.1	23.0	24.0	25.0
Norris Reservoir, Tenn.	...	6.9	12.2	14.7	16.1	17.5	19.3	20.8	...	...	...	...
North Central Average	...	3.3	7.4	10.5	12.5	14.0	15.1	16.3	17.4	18.1	...	..

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Dove, Rail and Gallinule Seasons Set

The U. S. Fish and Wildlife Service has announced dates and bag limits for dove, rail and gallinule shooting for North Carolina. There will again be a split season on doves, with the first section opening on September 15 and continuing through September 29. The second season will open January 1 and continue through January 15. There is a reduced bag limit on doves this year, eight birds per day and in possession as compared to 10 last year. Shooting hours for doves will be from noon to sunset each day of the season.

Rails and gallinules may be taken from September 1 through October 30. Bag limit on rails and gallinules is 15 per day for any single species or combination of species. The bag limit on soras, a small type of rail, is 25 per day. Shooting hours for these birds will be from one-half hour before sunrise to sunset each day of the season.

* * * *

North Carolina Hunting Regulations Available

Enough copies of the 1951-1952 hunting regulations have been printed and distributed to license dealers to supply every license buyer with a copy. All hunters should be sure to avail themselves of a copy.

* * * *

Quail Hunting Outlook Good

Dry weather during the nesting season made nesting conditions almost ideal this year, and a good hatch of birds should be reflected in excellent quail hunting in most parts of the state this fall.

* * * *

WILDLIFE Nearing 25,000 Mark

If the current influx of subscriptions continues, Wildlife in North Carolina will have a total circulation of 25,000 by October or November. New subscribers will receive copies of the Commission's four-color game fish chart as long as the supply lasts. An appeal is being made to encourage people to send subscriptions to relatives and friends in the armed services. Most GIs like to hunt and fish, and are interested in what is going on back home to preserve their sport while they are gone.

Sandhills Beaver

Story and Pictures by Jack Dermid

When the white man first settled in North Carolina, beaver were generally distributed throughout the state. But beaver pelts were worth gold or silver, and ambitious trappers cut quickly and deeply into the population. In 1897, according to State Museum records, the last of our native beavers were trapped in Stokes county. A colorful member of our fauna had been exterminated.

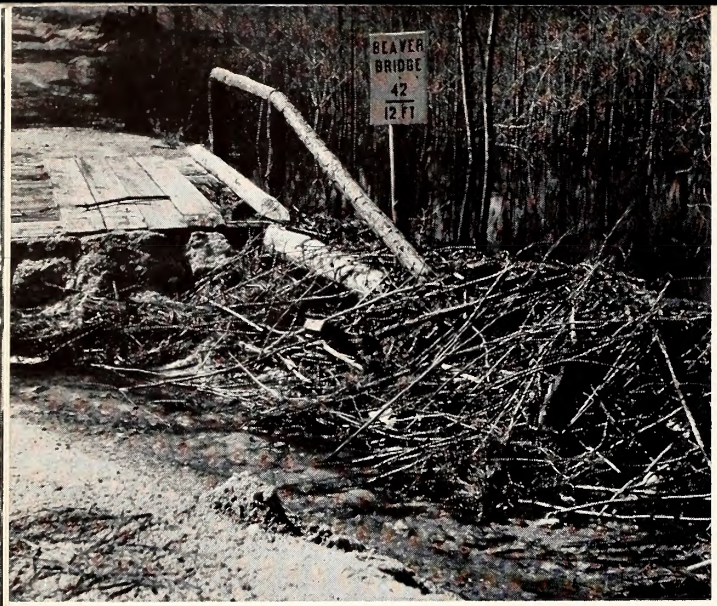
Since the turn of the century, several introductions of beaver have been made. None of these proved successful until 1939, when 29 beaver from Pennsylvania were planted in the Sandhills Wildlife Management Area near Rockingham. Two of the released beaver were known to perish, but the surviving individuals found the environment suitable, dispersed, and multiplied.

During the summer of 1949, a beaver census was taken along the streams of the refuge and parts of surrounding counties. Seventy-seven colonies were counted. Based on an average of five individuals per colony, the population numbered 385. Today biologists estimate that more than 100 colonies exist.

It is not expected that beaver from this sandhills nucleus will gradually spread over North Carolina, nor would it be desirable. The beaver is capable of causing considerable damage in populated farming communities. Water backed up by their dams might flood cropland, valuable stands of timber, and roads. Its presence is already being felt in the Sandhills. But in its place the beaver is a valuable furbearer from both the esthetic and economic viewpoint. Besides possessing prized fur, it is a good water conservationist on headwater streams. Beaver ponds improve the habitat for many other forms of wildlife.

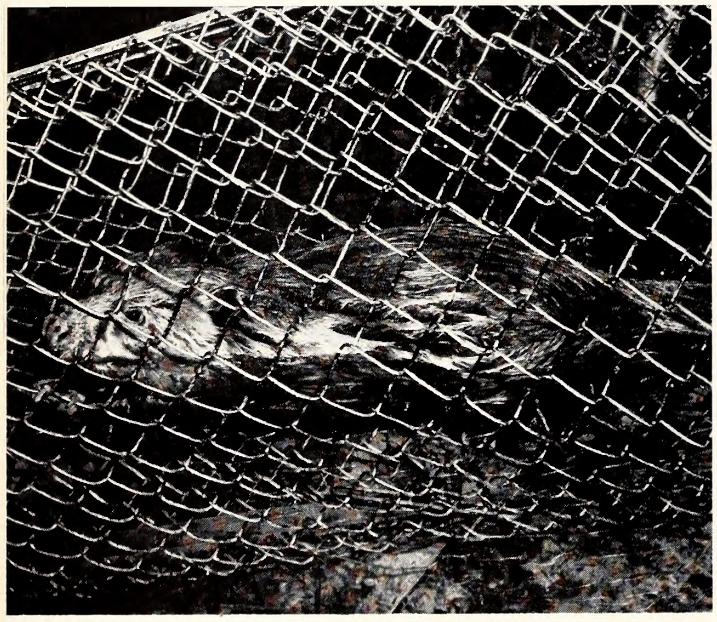
Last spring before the young were born, two pairs of surplus beaver were live-trapped by Wildlife Commission personnel for release in a wilderness area. More releases are planned for the future. In this way, beaver may be slowly re-established in those areas of the state which are suitable for them. It is hoped that eventually the beaver population will become great enough to permit a legal trapping season.

Turn the page for a picture story about the Sandhills beaver.

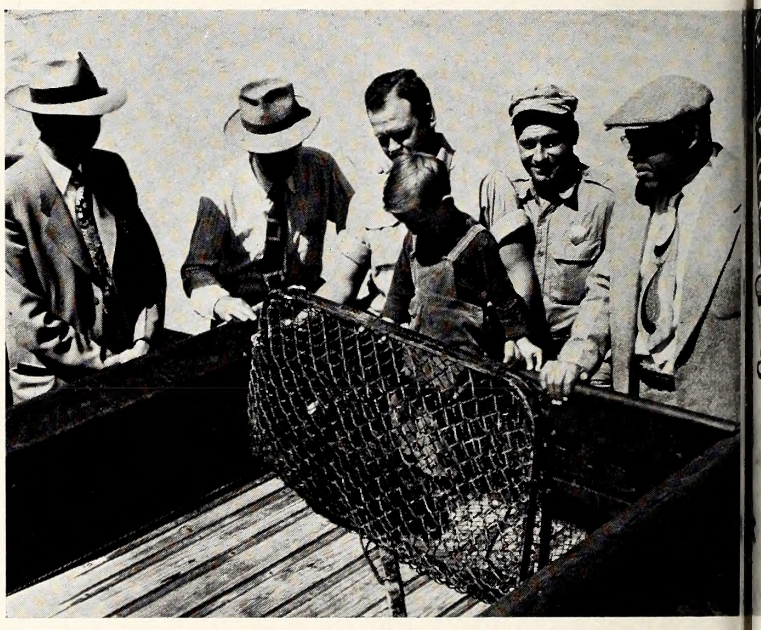


Last spring two pairs of destructive beaver were live-trapped in the Sandhills Wildlife Management Area for release in a wilderness area. Here a dam constructed at a bridge resulted in the washing out of a fire control road.

Beavers build sturdy dams of sticks, mud, and plant debris that will easily support the weight of a man. The longest dam discovered in the Sandhills measured nearly 150 yards, while the highest one was in excess of five feet.



Beavers are not injured by the trap, but probably get the greatest surprise of their lives when the jaws close. Frequently they spring the trap prematurely by pushing a stick before them. Even so they will return again and again to repair the dam.



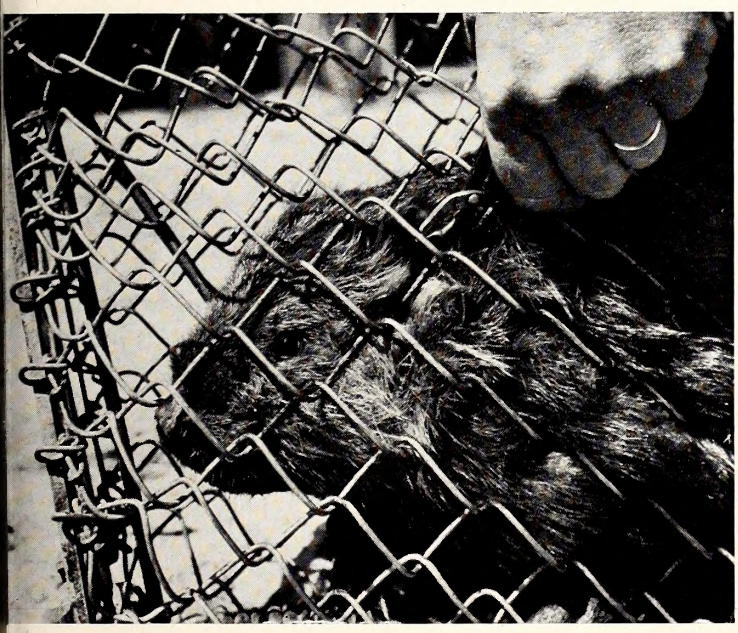
Beavers are a curiosity to the people living in the Sandhills area. Although beaver tales and signs are widespread, few persons have seen a living specimen close at hand. They flock around the trapper's truck and drive for miles to see one in a holding pen.

When released at its new home, this large female entered the water slowly and cautiously. Beavers live so closely associated with water that it is rare to see one with its pelt dry. It soon dived below the surface and reappeared some distance from shore.

Once underway, the beaver began exploring its surroundings with surprising intentness instead of rushing away in panic. Using only its webbed hind feet for propulsion, it swam swiftly and silently. The large flat tail is used as a rudder.

The secret of successful trapping is found in the beaver's persistence in keeping its dams in good repair. Breaks in a dam will be stopped as soon as they are discovered. Above, a Bailey live trap is being spread open for placement under water at a break.

The trap is set in shallow water so that the caught beaver will not drown. When a beaver approaches and nudges the upright trigger in the center of the trap, the two wings of heavy wire snap around it. Note beaver in lower portion of trap.

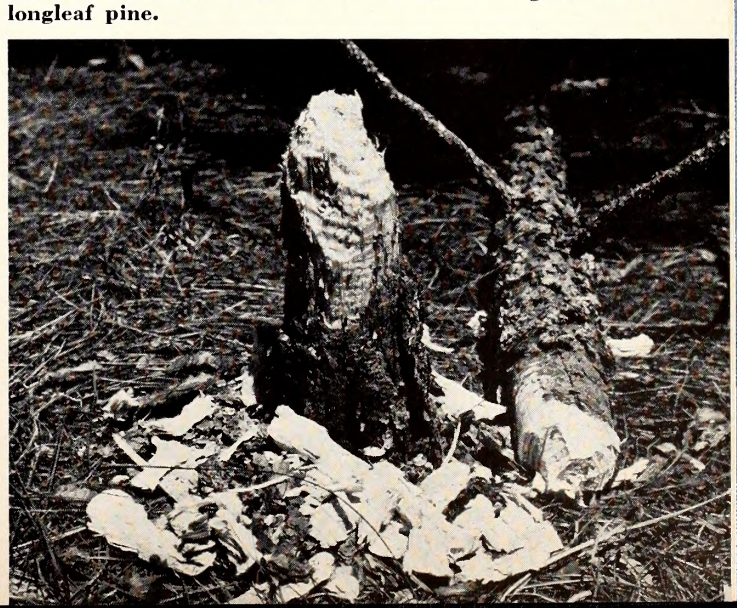


A numbered tag is placed in the ear of each beaver trapped. In this way it can be identified if found later. Beavers are docile animals in their natural habitat, but they are mean to handle; and care must be taken to avoid their powerful jaws.

A pair of beavers photographed in a cage designed for transporting them to the point of release. State trappers found it necessary to keep beavers caught in different colonies separated in captivity to prevent them from fighting viciously among themselves.

Signs of beaver activity are abundant in the Sandhills refuge. This photo shows a point of embarkation at a lake edge. The logs have been dragged from "lumbering operations" farther inshore, and will be used for food and construction.

Beavers have sharp, large, chisel-like front teeth, and the felling of trees is an everyday job. The inner bark, tender green bark, and young shoots are used for food. The largest cut tree observed in the Sandhills was an eighteen-inch longleaf pine.



This is the story of two men, a rural school in Wilkes County, and success in teaching—

Conservation At Th

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MEET THEM! Two native "Tar Heels" who are real conservationists—Mr. P. W. Gregory, principal, and Mr. L. D. Woodruff, biologist, of the Mountain View School, Wilkes county. Not only do these men realize the need for a conservation program, but they know that the public school is a good place to begin a program of teaching and practicing conservation.

Mountain View is a large, rural consolidated school with a faculty of twenty-eight members and an enrollment of about 900 pupils. These facts are not too unusual; but to make a visit there one soon learns that unusual activities are under way because Mr. Gregory is up-to-date, enthusiastic, and energetic enough to promote a Resource-Use Education program in his school, stressing conservation of our natural resources. The principal cannot do the job alone, but with the aid of Mr. Woodruff as assistant director and each faculty member equally interested and eager to teach conservation, the job is getting done well and happily.

A great variety of conservation material may be found at the school—in the office, library, and in the classrooms. It is also easy to see that the material is being used. Mr. Gregory is especially interested in forestry, so much so that an outstanding project in reforestation was undertaken under his supervision last year. The school is well blessed with thirty acres of scrubby woodland, and it is here that the school project is carried on. Last year approximately three acres were planted in white pines by the students interested in this work. Included in this project was the planting of trees, thinning of timber, as well as other forestry management aspects. Three thousand white pines were set out on school property this year while one thousand five hundred were set out last year. In addition the boys interested in this work set out an additional six thousand of the same kind on their own farms this year.

Since Mr. Gregory is unusually interested in a reforestation project, Mr. Woodruff stresses wildlife. For many years he had taught conservation, but organized a Junior Wildlife Club two years ago. This year found interest and activity in full swing through organized plans, with ninety-seven members in the club. When asked why he became so eager and willing to teach conservation of our natural resources, Mr. Woodruff replied, "I find that the pupils so badly misunderstand the interrelationship of our natural resources and their importance that I felt it my duty as a citizen and teacher to at least attempt to include it in our program."

Several wildlife representatives have helped with the work. Mr. Ray Derrick, Director of the Biology Department at Appalachian State Teachers College, met with the club and emphasized the establishment and management of farm fish ponds. He also inspected several fish pond sites with school personnel and made recommendations according to his findings.

Mr. Joel Bentley, Wildlife Protector of Wilkes county, with a representative from the Education Division of the Wildlife Resources Commission visited the school and showed the film, "Tar Heel Wildlife." Also short lectures were made concerning the recently established deer management area known as the Little Grandfather Mountain Wildlife Management Area which is located in Wilkes county. Mr. Bentley stressed the individual responsibility of each citizen in the community and county to make the refuge an asset to the community and state. He recommended the confinement of self-hunting dogs and the cooperation of each citizen with the wildlife protectors and management area employees.

Another study and practice was promoted by Mr. T. R. Mitchell, District Biologist, who made available through the Wildlife Resources Commission multiflora rose and bicolor lespedeza for planting by the club members.

Credit, interest, and success of the program is also given to Mr. H. C. Colvard, Assistant Farm Agent and 4-H Club leader, and the Wilkes County Soil Conservationist, Mr. R. E. Dunn. They helped the pupils understand and appreciate such environmental factors as reforestation, soil conservation practices, and good farm management.

Students check the growth rate of white pines planted on the grounds of Mountain View School. Several thousand seedlings were set out in a reforestation project.

by Lunette Barber
Wildlife Education Representative

ountain View School

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Not only have the club members and other interested students been well informed, but they have gained basic information by trips to various places of interest. Several field trips under the direction of the wildlife club sponsor, Mr. Woodruff, have been made into the nearby forests and fields to study the habitat and other biological factors of wildlife. In addition a trip was arranged for the club by the Wilkes County Wildlife Club which has shown much interest in the junior club. The entire club was taken to the Roaring Gap Fish Hatchery to study fish, their needs, and management. The Wilkes club was glad to finance the entire trip because of the tremendous interest shown by the students. Later another bus was chartered and club members journeyed through the Little Grandfather Mountain Management Area and revisited Roaring Gap Hatchery, consolidating in their minds the many things of interest they were beginning to learn.

Getting informed and learning from observation are necessary but the club carried out several activities: Bird food project—many members have successfully planted bicolor lespedeza, multiflora rose and seed mixture in an effort to improve the environment for birds and save the soil. Many thousands of plants were set out by club members. Pheasant project: the project is two years old. The first year only forty birds were successfully raised out of several hatchings. In June thirty-two pheasants were laying and 250 eggs were being incubated. Essay contest: J. L. Wyatt, a senior, was presented a beautiful rod and reel for his accomplishment by the Wilkes County Wildlife Club.

L. D. Woodruff instructs a student in proper shooting methods. He emphasizes the importance of shooting accurately in order to kill instead of cripple.

To supplement interest and information in wildlife conservation, Mr. J. B. McCoy of North Wilkesboro, proprietor of a local hotel, personally gave a subscription to WILDLIFE IN NORTH CAROLINA to each high school in the county. This is most gratifying to know that a local individual is interested in youth and conservation to that extent.

It would be quite unfair not to mention the fact that largely through the efforts of Mr. Gregory a Resource-Use Education course was set up at Appalachian State Teachers College for teachers of Wilkes county. Several teachers from Mountain View School attended this course which met four hours per week for ten weeks in an effort to adequately understand proper use of our various resources. The results of this course have carried over into the schoolroom as proven by the fact that several teachers, elementary as well as high school, are now acutely conscious of the need for wise use of our resources and these various relationships are now being taught in the various grades. With conservation-minded school officials and faculty members, plans to carry out the following projects next year have already been made:

1. Establish a gun and rifle club in order to teach the proper use and handling of firearms.
2. Build and install squirrel boxes on school grounds and nearby forests.
3. Continue the planting of the various bird foods already in progress.
4. Build bird houses properly in lower grades and erect them.
5. Help to establish farm fish ponds and teach management of them.
6. Continue reforestation projects on school grounds as well as in the community.
7. In-service education for teachers in order that the vision for better use of our resources may be permeated.

It is most gratifying to know that educators such as the ones mentioned above are eager and willing to *do* something about conservation instead of *talking* about it. The principal and faculty of Mountain View School realize that the future holds less for a fast increasing population of Americans unless something is done to conserve our soil, water, forest, and wildlife. It is hoped that more schools will begin similar programs.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Wildlife Resources Commission
Raleigh, North Carolina

Gentlemen:

Where can I expect fish in this hot weather?

Yours truly,

Joe Doaks

Dear Joe,

Right now it's time to head for salt water! And what's more you can use your casting rod and fly rod just as effectively there as on a trout stream or on your pond at home. You do not have to start dreaming up excuses to explain to Mary the absolute necessity of spending a hundred bucks or so for fancy and specialized fishing tackle. Just pack up your regular fresh-water gear and head for the shore.

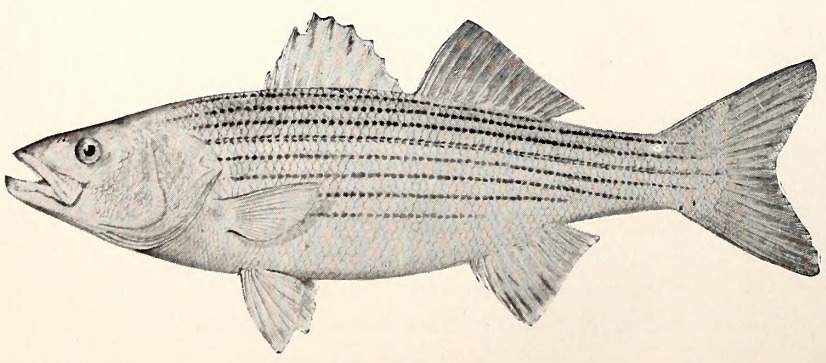
We were glad to hear that you had such good luck in your trout fishing this year. Reports are that the season just closed was one of the best. The bass and bream fishermen have been doing well this year, too, in the waters down east. That is, they were doing well until the last few weeks when the water got nearly hot enough to boil the fish right in their own boudoirs.

Now, during September and October, you can expect to find some of the year's best fishing down along the coast. The trout season is over and the bass are not feeding much, so why not pack Mary and the kids into the chariot and see what fine fishing you have been missing all these years? The bluefish, weakfish, and striped bass will go for anything that looks like a minnow. Plugs will be good for them, and so will streamer flies behind a spinner. Channel bass may be taken on a plug by casting from the beaches in September, but most of them will move off shore during October. You may have better luck with them by using bait, but there are times when artificial lures are deadly.

The croakers, spot, and kingfish or sea mullet are principally bottom feeders. For them you should fish on the bottom with shrimp, pieces of crab, or cut bait. It is not very exciting to use a heavy line with a quarter-pound of lead for a sinker in order to catch fish weighing from a half to two or three pounds. You really can have fun with them, though, by using a light line on your casting rod and the very least amount of lead that will take your hook down. Unless the tide is running strong and the water is deep, a quarter or a half-ounce of lead will be plenty to take your hook where it will do the most good, and then you will be set for some excitement and fast action.

In order to get to these fish, you can bring your boat along on the trailer, or you can rent a rowboat at nearly any town along the coast. If you would rather wade, try fishing the inlets through the outer banks or in the surf. When Mary insists that you stay dressed up for some fancy party or to take her to the movies, you can usually sneak in a few hours of fishing from a bridge or fishing pier without even getting your hair mussed or your feet wet, and still be presentable when you are through.

Now, the next question is where to go. Get your road map and let's take a look at the coast line for a few minutes. Starting at the north, you see Currituck Sound and Albemarle Sound. They are fresh-water areas, and in cooler weather provide some of the best bass and bream fishing from Maine to Florida. In the



Excellent places to troll for striped bass or "rock" are located near Roanoke Island. Plugs and streamer flies behind a spinner are good lures.

vicinity of Roanoke Island the water becomes brackish, and here is a fine place to troll for striped bass or "rock." Fish of ten pounds and over are not rare here, and when you snag one he will keep you as busy as the proverbial one-armed paper hanger with the seven-year itch.

You can drive to Oregon Inlet or take a ferry to Hatteras or Ocracoke for their famous channel bass fishing. The bass move in through these inlets into the sound in May, but by September fishing is best at the inlets or on the beaches. They may be expected in the inlets, particularly at night, all the way to Shallotte, and in some places they provide excellent surf fishing.

Because of the inlets, Pamlico Sound is salty to the east along the outer banks and at least brackish to the west. Weakfish or "sea trout" are common on the mainland side. Core Sound and Bogue Sound are famous fishing spots, and only small boats are needed. Here you can find the whole list of species waiting for your hook. Carteret county receives more salt-water fish commercially than any other county along the coast. This may mean that there are more fish there—or it may just mean that there are more fishermen.

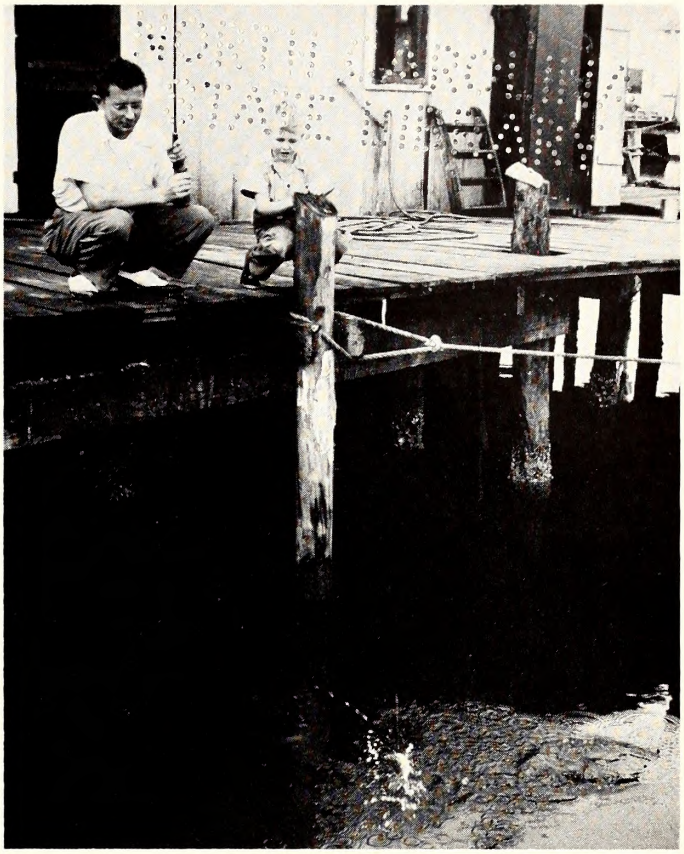
The numerous and almost continuous small sounds and inlets from New River to Carolina Beach, all connected by the Intracoastal Waterway, provide a perfect place for the safe use of small boats. This is also true from Southport to the South Carolina line, where the live oaks and the spanish moss indicate mild winters and consequently a long fall fishing season. The spot fishing here in October is something you can't tell people about—they just will not believe you. But take your fly rod!

There is one word of warning that goes with this salt-water fishing business, Joe. You must take care of your tackle. Salt water will not damage nylon lines or leaders but it will corrode anything made of steel. When you come in from fishing it is absolutely necessary to wash all of the equipment in fresh water. The hooks of your plugs and flies should be oiled after washing to prevent rust. Your reel will have salt in it, and perhaps sand as well. It should be taken down and cleaned and oiled.

If you do not take care of your equipment, the salt will ruin it, and your disposition too; but if you do, you will enjoy some of the finest sport you have ever had. Most of these fish will never see a baited hook, so it is good conservation to take all you can use. They are good sport on your line, good dinners in your frying pan, and in your deep-freeze they are good insurance against our present "expanding national economy."

Good luck, Joe,
Harry Cornell

The world's record striped bass (rockfish) was landed in Albemarle Sound near Edenton, N. C., in 1890. It was a 125-pounder taken in a net.



When you go to salt water, don't forget to take your flyrod. Spot, croakers, pinfish, and others go for pieces of shrimp or crab and provide both excitement and fast action. Fish life is abundant in the ocean and sounds. Good luck is the rule, particularly during September and October. Below. Anglers clean a catch of bluefish.

Scouts Challenge Sportsmen

by W. L. Hamnett
Wildlife Education Representative

THE SPORTSMEN OF NORTH CAROLINA now have a strong ally in the Boy Scouts of our state. The realigned requirements toward attaining the rank of Star, Life and Eagle now include merit badges from nature and conservation groups. To become an Eagle Scout a boy must have satisfied the requirements of a nature merit badge. Somewhere along the line to become a Star, Life, or Eagle Scout the boy must take one of the merit badges from the conservation group: forestry, soil and water conservation, or wildlife management. Of course the Wildlife Commission is vitally interested in all three subjects in the group, but more especially in wildlife management.

There is much that you as sportsmen can do and learn from the requirements set forth in this badge. You can expand the efforts of the scouts if you try and test your ability to pass the badge. Although you may not receive an award in a Court of Honor, you will reap the benefits in years to come through a better understanding, realization, and appreciation of wildlife management and what it is trying to accomplish, as well as the fact that you have done something.

I can't help but feel you will see that our present scouts are going to be better sportsmen tomorrow than you are today. Their training and interest in the out-of-doors is contributing much toward the meaning of conservation—wise use.

As you read over these requirements see how many you have done, or what you know, and then ask yourself the blunt question, "Am I really a sportsman?"

To earn the *Merit Badge* in Wildlife Management, you must:

1. Do *one:*
   a. On a rough sketch of a five-acre area—(1) show and identify the chief types of plant cover; (2) show the location (and identify) nests, dens, runways, droppings, feeding, and other animal signs.
   b. On a five-acre area — (1) identify three of the chief trees, three of shrub, or three ground cover species used by animals for food, shelter or cover; (2) identify by signs or sign 10 of the animal species found in the area.
2. Describe the value of three wild animals each as sources of food, clothing and recreation; and the role of three animals each in insect, weed, and rodent control.
3. a. Describe the damage to wildlife resulting from wildfire, overgrazing, unwise forest practices, soil erosion, unwise drainage, "slick and clean" farming, and water pollution.
   b. Explain the relationship between wildlife and the natural habitat and how man controls the natural enviroment.
4. Explain who makes laws setting definite seasons and bag limits on hunting, fishing and trapping in your state, and the reason for the laws.
5. Do *one:*
   a. Make a wildlife count on each of two contrasting approximate five-acre plots. Grazed versus ungrazed woodlots; or strip cropped versus solid planting; or burned over versus not burned over area; or other contrasting areas.
   b. Visit a state or federal or private game refuge or game management area with a wildlife technician, and write at least 500 words on what is being done to make the area better for wildlife.
   c. Visit a game farm or fish hatchery with a wildlife technician and write a report of at least 500 words on the pros and cons of game stocking against habitat improvement as a means of increasing wildlife populations.
   d. Attend a recognized camp for at least a week where conservation is a major part of the program and describe how you will use the information you learn.
   e. Go out for at least two days with a commercial fisherman and describe his catch and methods used.
   f. Select one wildlife species common to your neighborhood and find out what management practices are used, or the practices that may be necessary to maintain the species.
6. Do *one:*
   a. Help build, stock or fertilize a farm pond.
   b. Plant stream or ditch banks to control erosion.
   c. Build a fence or plant a "living fence" to exclude stock from a woodlot, stream or pond banks, or other easily damaged wildlife habitat.
   d. Set out 200 food plants for birds and animals.
   e. Build three check dams, deflectors or cover devices in a stream or lake to provide better shelter for fish and to help reduce erosion.
   f. Study the fish species in a pond or lake, and if necessary carry out such practices as may be necessary to benefit the fish.
   g. Build and set out in suitable places ten nesting boxes or "den pipes."

• CONTINUED ON PAGE 19 •

S. H. McPherson and the cat which killed an incubating quail on his farm. He holds a handful of feathers picked up at the nesting site.

McPherson's interest in wildlife prompted him to give the eggs to Wildlife Patrolman Oscar Chadwick (left). Eleven of the thirteen eggs hatched under a bantam hen.

A Case of Cooperation

S. H. McPherson owns a farm and a seed business about four miles west of the City of Fayetteville. McPherson likes quail, and there are several coveys on his farm each fall. In the early summer the coveys break up in pairs as the birds begin the nesting season.

Just west of McPherson's fine old plantation house is a grove of pecan trees and a grape arbor. A pair of bobwhites selected a spot near the grape arbor to build their nest. Things went along smoothly with the happy bobwhite couple until one fine day one of McPherson's workers heard a scuffle in the vicinity of the quail nest and hurried over to investigate. Still in the nest were thirteen shiny quail eggs, but around the nest was a scattering of quail feathers. Bounding away from the spot was one of McPherson's cats—a mother cat with two kittens.

Mr. McPherson likes quail, and he was justifiably angry at the cat for killing the parent bird and leaving the eggs to spoil. On the other hand, he is in the seed business, and cats are mighty important items to have around a seed warehouse to keep rats and mice from eating up assorted peas, beans, lespedeza, wheat, rye, and other seeds. This particular cat, despite her appetite for quail, is an especially good mouser, and worth many times her weight in alfalfa seed.

McPherson swallowed the desire to take revenge on the cat with a charge from a shotgun. On the other hand, he didn't like the idea of thirteen quail eggs rotting in the sun instead of hatching into game birds for next fall's shooting. He remembered that a few miles away were the brooder pens of the state's former game farm, and he also remembered that Wildlife Patrolman Oscar Chadwick lives near the hatchery site. McPherson got in touch with Chadwick, and within a few hours the interrupted incubation of the quail eggs was resumed. Chadwick located a bantam hen that was very much in the mood for sitting on a clutch of eggs. The bantam accepted her new responsibilities without hestitation, and about three weeks later eleven of the thirteen quail eggs hatched.

McPherson's cat still patrols the dark corners of his seed warehouse in search of mice. She would probably take another quail off the nest if she got a chance. Cats are just built that way. But at the old game farm there are eleven young quail growing into prospective shotgun targets. And S. H. McPherson, for his interest and cooperation, will get a pair of them to release on his farm.

• CONTINUED FROM PAGE 18 •

h. Plant a windbreak or hedge or other suitable winter cover for wildlife.

i. Help plant a gully, road out, fill or eroding area, to reduce erosion, build up soil fertility and at the same time provide shelter for wildlife.

ATTENTION DOVE HUNTERS!

Cooperate with biologists by returning leg bands with complete kill information to the Fish and Wildlife Service, Washington 25, D. C.

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

Conducted By Win Donat

WHILE THE THERMOMETER SHOWS NO SIGNS OF IT, we always feel that when September comes summer is on the way out. Children are back in school and we look for the warm days and cool nights that make sleeping such a pleasure. During the summer and its activities, we have lost track of many of our winter programs and I'm thinking particularly of our wildlife club programs.

By way of a suggestion, here is something that, with a little ingenuity, materials, and a desire to create interest in your club, you can have ready for action this fall. An exciting and lifelike deer target can be rigged on a wire stretched between trees. The deer runs on steel pulleys and can be made to bound while running. Club members will stay and shoot as long as daylight holds out and fellows will come from all over the county. Hits can be scored for each flight of shooters and the beautiful part is that there is no serious damage done to the pocketbook. The target can be equipped with demountable antlers and unless he is very careful, a shooter can be penalized for shooting at a doe. While the target must be started on its course by hand, an easily arranged device at the end of the course returns the target to the shooting point for scoring and taping the holes.

Certain types of locations are preferable but are not absolutely necessary. Plenty of brush about six feet high and trees to provide aiming penalties give all the natural conditions one would find on a deer hunt.

Those who really want to plan for their club will find this and several other games the answer to the question, "What can we do to build interest and membership?" September is the time to get busy. If I can help, there is nothing I would rather do.

W.D.

Mr. J. L. Grimshawe of Flat Rock, N. C., asks the following:

"I have just read with much interest your article on poisonous snakes in North Carolina. Here in the mountainous section of the state we are concerned mostly with the timber rattler. He is a very unsociable fellow; desires only to be left alone, which is agreeable to me.

"My work demands that I spend most of my time in the woods at an altitude of three thousand to almost six thousand feet. I know of many cases where timber rattlesnakes have been killed at approximately five thousand feet elevation but I know of no case where they have been seen at a higher elevation.

"Somewhere in an article on rattlesnakes I read that they are not apt to be found at an altitude above forty-five hundred feet, I think the article said.

"Can some of our readers give me more definite information about the limits of elevation above which poisonous snakes are not apt to be found?"

We took this one to the folks at the State Museum and asked their opinion. It seems that there is no iron clad fact that poisonous snakes will not be found above a certain altitude in North Carolina because there just are no mountains high enough to present temperature and food problems that would discourage these snakes. Little actual field study on the subject has been done, but the consensus is that if a rattler is found at one elevation at one locality it is almost certain that there is an adequate food supply. Generally, there should be no reason why rattlers could not be found at any elevation in the North Carolina mountains.

The following letter is gratifying to those of us who are trying to teach and preach the wiser use of our hunting and fishing resources:

"I have just finished reading my July issue of WILDLIFE IN NORTH CAROLINA and would like you to know I think the work the Wildlife Commission is doing toward the restocking of deer in various areas of western North Carolina is fine. It makes me, and I know many more men who are now in service, feel good to know when we get out there is going to be better hunting in our home state. Keep up the good work."

Bill Norman
U. S. Submarine Base
New London, Conn.

If we have one responsibility that has top priority, it should be to see that these fellows in service have more and better hunting and fishing when they come back. This responsibility is divided between the Commission and the sportsmen. The division does not lessen the responsibility, and if our Tar Heel servicemen and

women feel that we have done the job, then we can all feel proud.

The following letter from Lee County Wildlife Protector Jack Campbell, Jr., contains some information that may be of use:

"Dr. George G. Chiles of Sanford, who is helping his son raise pheasants, has come up with something to stop the young birds from pecking each other, an act which often causes death in the early stages of growth. He purchased some "pine tar" made by a company in Wilmington and sold at all drugstores. He put this on feet of birds and on their backs, often in places that were bleeding and after one peck the birds were noticed trying to get the taste out of their mouth.

"This might be something old or it might be something other quail and pheasant raisers would like to know. I am passing it on to you to use if it is new."

Mr. N. Anderson of Wilson, N. C., asks the following:

"Will you please answer the following question for me?

"If you feed the fish six or seven loaves of bread in the morning and then in the afternoon put 800 to 1,000 pounds of fertilizer in a four acre pond, what effect will that have on the fish and fishing in this pond the next day?

"Thanking you for an answer."

In the first place, our folks say that 800 to 1,000 pounds per acre is too much fertilizer for one application. The immediate effect is to release excessive amounts of nitrogen in the water. There is no dangerous connection between feeding the bread and fertilization. The effect on fishing might be to keep the fish from biting the next day and the effect of the fertilizer might make itself felt the second day with dead fish appearing.

The usual rate for fertilizer is one hundred pounds per acre per application.

We are happy to show the following photo made by Mr. Robert C. Young, Principal of the Zeb Vance High School in Henderson. The picture and caption were sent in by James C. Cooper, President of the Vance County Wildlife Club.

Twenty thousand bass fingerlings have been stocked by the Wildlife Resources Commission in Big Island Creek where its waters have been backed up by Buggs Island Dam in Vance and Granville counties. Virginia and North Carolina are cooperating to make the area a recreational paradise.

• CONTINUED FROM PAGE 6 •

several southeastern states is designed, through more knowledge of the birds, to bring about the means of better dove management. Perhaps it will never be possible to set a season which will in no way interfere with the breeding habits of the birds, but a judicious setting of season can greatly reduce the kill of breeding birds.

Little has ever been done by way of improving or restoring dove habitat to increase the shootable population. Drastic measures such as the setting aside of protected nesting sites is one possibility. More adequate provisions could be made for providing an abundance of food during the critical months when food is scarce.

The problem of dove management remains a difficult one. The birds are migratory, and thus become the responsibility of the several states working in close cooperation with the federal government.

Whether they be considered songbirds or shotgun targets, mourning doves are an important part of our wildlife heritage, and as such are worthy of the consideration of all who love the out-of-doors.

North Carolina waters offer endless variety to the sports fisherman. More than 40 species of game fish are found from the Gulf Stream to lakes in the highest mountains of eastern America. The range makes fishing a year-round sport in the state.

Annual Wildlife Federation Meeting At Asheville

The Buncombe County Chapter of the North Carolina Wildlife Federation will play host to the annual meeting of the Federation this year. The meeting is scheduled to get under way Monday, October 8 and last through Tuesday evening, October 9. Headquarters for the event will be the Battery Park Hotel, and registration begins Sunday night, Oct. 7.

A highlight of the meeting will be the selection of Miss Wildlife of 1951 in the Rhododendron Room during the afternoon of the 8th, and in the main ballroom that evening will be a banquet at which awards will be made to the winners of the Wildlife Essay Contest held last spring, and to the winner of the Miss Wildlife beauty contest. Following the banquet will be an old-fashioned hoe-down.

Many wildlife clubs throughout the state have already selected their candidate for the Miss Wildlife title, and those who have not already done so should select a contestant at once.

Ross O. Stevens, Executive Secretary of the Federation, and Roland McClamroch, President, have urged that all members of the Federation attend the meeting, and make their reservations early.

• CONTINUED FROM PAGE 7 •

the sun. Trout will not survive and reproduce under these conditions.

Another value which wildlife has for me and my community is added revenue and business. It is estimated that more than four billions of dollars are spent annually over the nation by hunters and fishermen. North Carolina's share in this volume of business depends entirely on how well we manage our wildlife resources to provide good hunting and fishing. Millions of dollars are spent alone on the necessary equipment for hunting and fishing, creating greater business for more people. Many people earn their livelihood by acting as guides for hunting parties. Many such guides are found, especially along our coast where in Currituck and Dare counties and many other ports of call for the fowl of our streams and rivers. They conduct many visitors on duck and goose hunting expeditions.

In conserving wildlife we conserve the livelihood of many people. Better care of game in private forests would bring a return of valuable species as is happening in protected national forests and parks. Care means not only protection from fire and from over killing by man and natural enemies, but also provision for food and shelter, possibly by the planting of food trees and shrubs. Such game management of woodland and field as a part of the farming enterprise pays well in food, in pleasure, and in income from visiting sportsmen. More lakes mean more muskrats and more income as well as new life on new waters.

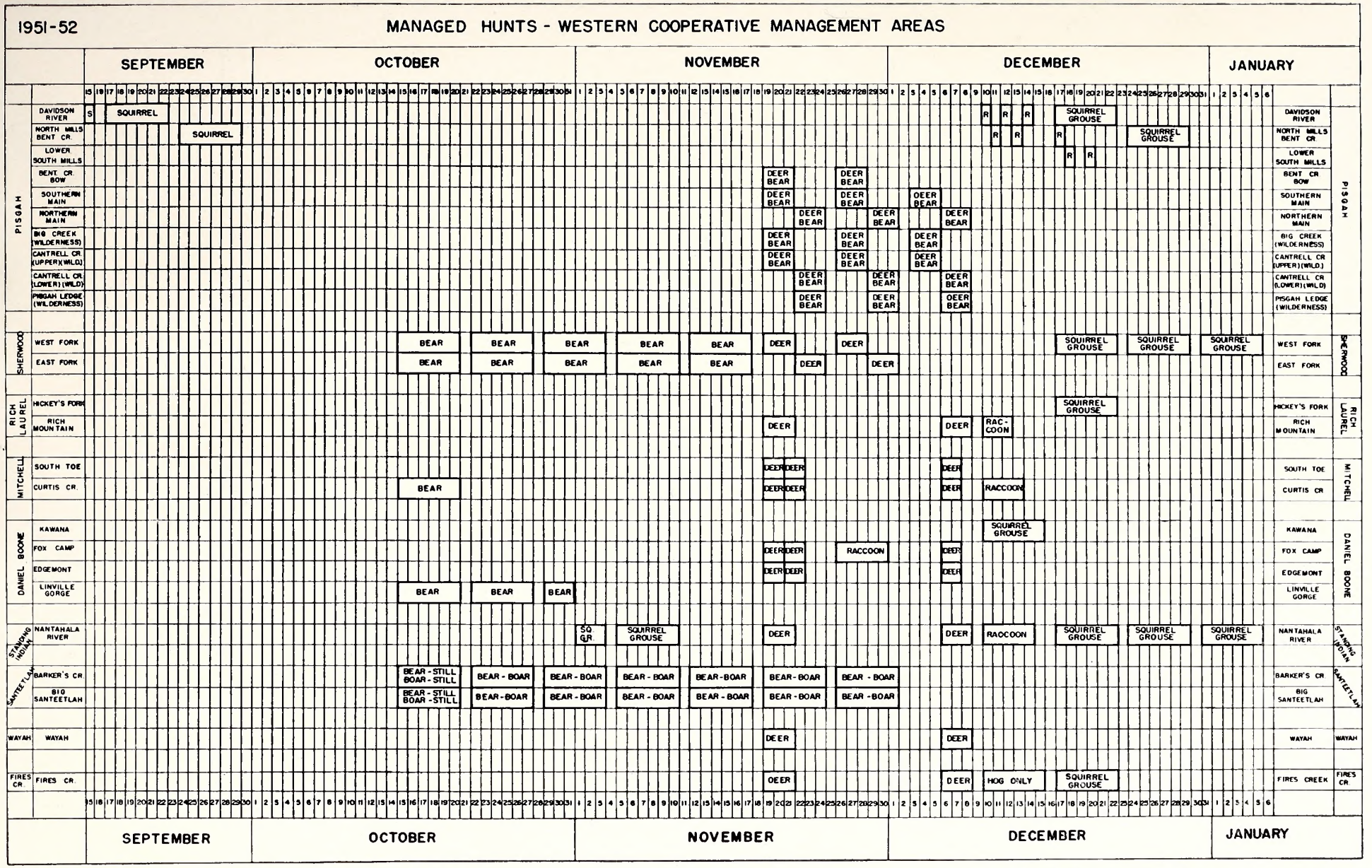
Wildlife means to me and my community added income in the way of furbearing animals. Thousands of pelts are caught and sold annually for many thousands of dollars. Through the proper control of trapping mink, muskrat, otter, and many other forms of mammals we can create a better living for our community. Wildlife is the same as a crop and it must be cultivated and properly fertilized for satisfactory results. Through proper management a balance must be kept between wildlife, forest, and man. The life producing and sustaining elements might be considered as being on one side of the scale and all living things on the other. If this idea of a balance is kept in mind it will be easier to see how the use and abuse of the basic elements has destroyed the balance and thus produced some of the conditions which cause our present wildlife problems. For instance, the ill-advised draining of marsh and swampy areas to provide more farm and grazing lands has destroyed the breeding places for waterfowl and valuable fur-bearing animals. Again it may be easily seen that there is a relationship between all resources each depending on the other to a greater or lesser degree for existence.

Wildlife conservation is closely connected with soil conservation, for in conserving one we conserve the other. Protected waterways provide an excellent coverage for quail and rabbits. Farm practices in hilly country forms an added income in fish as well as a harbor for fowl.

One of the most important things wildlife means to me and my community is controlling insects. Wildlife plays an important part in the form of saving the farmers millions of dollars annually. Birds eat obnoxious weed seeds as well as insects and grubs which are harmful to our crops. It has been said that if anything overcomes man except himself it will be the low order of insects. Their rapid reproduction and ability to grow resistance to new chemicals make them a constant threat to our nation's security. Birds and some mammals can to a large extent control these invaders.

But wildlife means more to me and my community than in the form of money. One who has never seen the beauty of growing things or of the flitting birds has never seen life. Nature is so close to man that it is a part of our very life. Many have seen this beauty which has resulted in greater recreational facilities. Many parks and national forests have been built by state organizations. Millions of dollars have been spent in creating parks for the recreation of people in large cities. We, the people of North Carolina, have these parks covering entire country sides and they ask from us only a little care in order to give beauty and life to a troubled world.

Some birds cannot walk, while others walk with difficulty. Swifts, for example, never walk and never set foot on the ground, the Fish and Wildlife Service says. Swallows, nighthawks, whippoorwills, and other goatsuckers walk clumsily, having weak legs.



Above is a graphic summary of the dates and areas open to hunting in the cooperative wildlife management areas in western North Carolina. Applications are now being accepted. For organized bear and boar hunts your application must be mailed before midnight September 8; for deer hunts, September 22. For complete information and application forms, write Wildlife Resources Commission, Box 2919, Raleigh.

R—Raccoon

MR. GAME HOG MUST GO

WHEN HE WINS

WE ALL LOSE

WIN DONAT

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Wildlife
IN NORTH CAROLINA

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Photo by Jack Dermid

Schoolboy's Dream

Although school is well underway by October, and the fishing season waning, nobody can keep youngsters from daydreaming—nor are dreams confined to the young. The past summer furnished good fishing and many pleasant days outdoors. But it is the future the Wildlife Resources Commission is thinking about. Its entire staff is devoted to making North Carolina one of the greatest fish and game states in the nation.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

W. KERR SCOTT
Governor

North Carolina Wildlife Resources Commission

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☆ ☆ ☆

COVER

Win Donat captures the fast action of a pair of blue-winged teal landing in a Carolina marsh. Bluewings appear in North Carolina during the early fall, but before the hunting season opens most of them migrate farther south. Few are bagged by hunters.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Win Donat ..... *Art Editor*
Marty Mabry ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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Photo by Jack Dermid

Incubating clapper rail. The nest was constructed on the ground in a dense clump of the salt marsh grass, *Spartina patens*. Just above the high tide mark, it was subject to destruction by high water during storms—a fate which often destroys rail nests by the hundreds. The bird's long bill is partly hidden by vegetation.

LET'S LEARN *About Our Wildlife*

The Thirty-Third of a Series on The Wildlife Species of North Carolina

The Clapper Rail – And Others

by Rod Amundson

History

DOWN ALONG THE MARSHES of the Carolina coast are thousands of game birds that have somehow failed to attract the attention given to ducks, geese, and other waterfowl. Rails, locally called marsh hens, are more easily heard than seen. The sharp, piercing "cac! cac! cac! cac! cac!" of the clapper rail is one of the most characteristic sounds of the vast stretches of salt marsh.

These interesting birds are seldom seen by the casual observer. They keep to the heavy cover of the marsh vegetation, and when disturbed bore deeper into the cover. Sometimes on moonlit nights they may be seen feeding along the margin of the sounds at low tide, but only the careful bird watcher will observe them during daylight hours.

Although seven species of rails inhabit the coast during the spring and summer months, the clapper rail is the most popular with gunners. The king rail is a little larger than the clapper, but not as numerous. Considerably smaller than the clapper rail is the Virginia rail, also not especially numerous. The sora, one of the smallest of the rail group, is probably most numerous of the group. It provides excellent shooting for the gunner, but is so small that a dressed bird would hardly make more than a big mouthful.

In the early days all types of rails were more abundant than they are now, but their small size made them less desirable to the market hunters who sought after larger game. They were, however, killed by the hundreds, more for the fun of shooting than the meat value of the birds. Protection by law has served to assure a sup-

ply of these birds, and there is little doubt that they will always remain on the game bird list.

Characteristics

The clapper rail is very pale olive green above with wide gray margins on the feathers. The wings and tail are gray-brown, the wing coverts a pale cinnamon, and the throat white. The under side of the body is pale gray-buff and the sides gray or grayish-brown barred with white. The beak and legs are long, and the tail is almost always held vertically with a jaunty tilt.

Color markings of the other rails are similar in general pattern, but in all cases darker than the clapper rail. The Virginia rail is distinguished by a definite downward curve in the back, whereas the sora has a relatively short, stubby tail.

All of the rails are more adapted to walking on wet, marshy ground than for swimming, although they are known to swim when necessary. The legs are rather long with four well-developed toes. In walking the head moves back and forth somewhat like that of a chicken, and at the same time the tail bobs along in rhythm.

The ease with which rails make their way through heavy marsh vegetation makes them difficult to observe. The practiced rail watcher will settle down as comfortably as he can in a marsh, and wait quietly for the birds to appear.

Nesting

The clapper rail is essentially a bird of the salt marshes, whereas the Virginia rail, king, and sora are found in the brackish or fresh water marshes. The clapper rail nests where it spends most of its time—on boggy marsh land only a few inches above high tide. Rail nests may be nothing more than a depression on fairly dry ground in a marsh with a few bits of grass, sedge, and rushes for padding. Sora rails build their nests more elaborately by weaving together a clump of reeds so that the nest is located well above the ground or the water.

Eggs vary in number from eight to a dozen, and are a buff color with brown spots. The young birds are almost entirely black, but soon gain the plumage of adult birds. Pairing usually occurs during the months spent in the wintering grounds to the south, and often unpaired young birds spend the entire summer in the winter nesting grounds.

Very little has been observed of the mating courtship, but there is a great deal of calling during the mating season.

Food Habits

Being marsh dwellers, rails feed on the variety of small creatures found in the salt or fresh water marshes. Clapper rails are fond of fiddler crabs and other crustaceans such as shrimp and small blue crabs, as well as snails, small mussels, and worms. They wander along the mud flats at low tide, leaving chicken-like tracks with strides ten inches long.

Brackish and fresh water rails, such as the Virginia and sora, feed on insects, worms, small fish, as well as seeds and berries.

In recent years the use of DDT has had an adverse effect on rails. Crabs and shrimp are highly susceptible to DDT, and birds which feed on poisoned crustaceans are in turn poisoned. The use of DDT for mosquito control along the Carolina coast has been rather limited, and it is doubtful that any extensive damage has been done to rail populations.

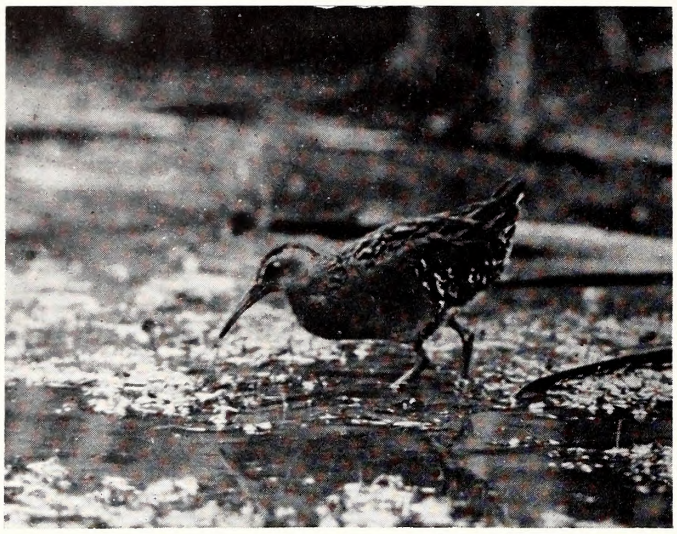
Enemies

Rails of all kinds are vulnerable to winged predators from time to time, but it is doubtful that such four-footed predators as mink can be of any grave danger. Rails move so quickly through the heavy marsh grasses that it would be difficult, if not impossible, for a mink or other animal to capture them.

Because of their nesting habits, clapper rails are probably their own worst enemy. The nests are built on ground only a few inches above high tide, and an unusual tide due to storms often destroys nests by the hundreds.

Photos by Jack Dermid

These eggs, buff-colored with brown spots, belong to the clapper rail shown on the opposite page. Below. Rail chicks are dressed in jet black down and are led from the nest soon after hatching.



Fish and Wildlife Service Photo

Feeding Virginia rail. Rails are very secretive, shy birds which are seldom seen in the wild unless they are forced to fly.

Management

Other than rigid protection by law and a limit on hunting seasons, very little is possible or necessary by way of rail management. Most of their native habitat is completely useless for agriculture or industry, and natural geographical changes in rail habitat would effect their number and distribution far more than the activities of mankind.

Shooting

It is rather surprising that rail shooting is not more popular than it is. Rails make sporting targets, and they are fairly abundant along the coast and well into inland waters during the fall migration. Perhaps the lack of popularity lies in the difficulty of the hunt itself.

Most rail hunting is done by punting a flat-bottomed boat over the marshes at high tide. In most coastal areas, this method of gunning is possible only at extreme high tide, a combination of what local residents term a moon tide and a wind tide.

With enough water over the flat marshes, an expert poler can move a boat rapidly enough over the partly submerged marsh grasses to flush out the birds. Wherever possible, rail prefer to run or swim through the vegetation, and must be forced to take wing.

When they first rise from the marsh, their flight is slow and rather awkward in appearance. They rise rather slowly, and rarely get more than a few feet above the marsh. On a windy day they may be tossed about erratically, thus making them difficult to hit. A peculiar habit has fooled many a marsh hen shooter into thinking he has dropped a bird, only to search in vain for the prize. Flying low over the vegetation, the bird will suddenly relax his wings and drop straight down into the grass. This often happens about the time the gunner shoots for fear the bird will get out of his gunsights.

Poling is usually done with a slender hardwood pole about seventeen feet long. Local residents along the marshes become quite proficient at the art, but the novice poler will have difficulty keeping the boat moving fast enough in the right direction without banging his companion over the head with the pole. Some rail hunters go out alone and pole their own boat, but it takes a skillful gunner to lay down the pole and pick up his gun in time for a shot before the target drops back to the marsh.

Fish and Wildlife Service Sketch by Edwin Sheppard

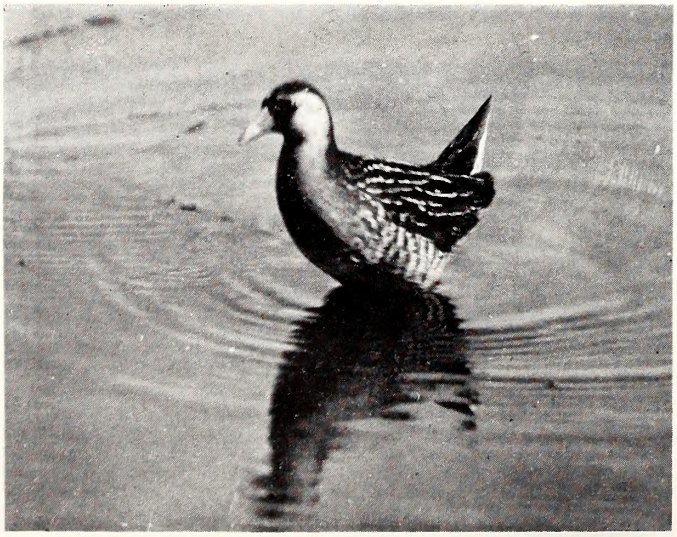
Largest of the group, the king rail is the common fresh-water "marsh hen" of North Carolina.

Sometimes when the birds are particularly hard to arouse they can be startled into flight by banging the pole down hard on the water. But at best, boat hunting for rail requires a great deal of hard work and stamina. A good retriever is a must in rail hunting. Clean hits are hard to find, and crippled birds are even more difficult.

Another form of rail hunting can be done by wading afoot over the marshes. Since the season comes in mild weather, a pair of light sneakers is to be preferred to heavy waders. The gunner can wander over the marsh with his dog and flush birds quite successfully. He must be alert for holes, however, and be prepared for a thorough wetting if he makes a misstep.

Although small, the sora rail provides excellent shooting for the gunner in our coastal marshes during the fall migration.

Fish and Wildlife Service Photo by O. J. Murie



HUNTING OUTLOOK FOR 1951-52

by Clyde P. Patton

Executive Director, Wildlife Resources Commission

THE OLD NORTH STATE has embarked on what promises to be the biggest hunting season in many years. Although there will be more hunters in the woods and fields than ever before, there should be game aplenty for Tar Heel nimrods. During the early part of the summer at the peak of the breeding season, dry weather bordering on drouth provided ideal nesting conditions for game birds. At the same time the Wildlife Commission's wildlife habitat restoration program had come through another successful year with thousands of farmers and sportsmen cooperating in improving living conditions for game. Although the habitat restoration program was designed essentially for such small game as quail, rabbits, and wild turkeys, big game has come in for an intensive management program. Large tracts of land have been set aside for deer management. Deer have been stocked in these areas, and although these deer will not be available for harvest this year, the deer management areas will assure a continuous supply of breeding stock in years to come.

North Carolina's fields, woodlands, swamps and marshes will provide hunting as varied as the natural habitat. First gunning was provided by rail and gallinule shooting along the coastal marshes. This will be followed later by an open season on ducks and geese. Two weeks of dove shooting yielded sport for hunters in the open fields despite a reduction in the bag limit made necessary by a fall-off in dove populations in the entire southeastern section of the United States. October will see the opening of the seasons on bear, wild boar, deer, squirrels, raccoon, and opossum. The season on quail, rabbits, and wild turkeys opens on Thanksgiving Day, together with ruffed grouse in the mountain counties.

Although there will be the usual complaints by hunters that it is difficult to find shooting grounds not posted by landowners, and complaints by landowners of trespass and other misbehavior on the part of hunters, there should be some improvement in the general attitude between farmers and sportsmen. During the past two years the Wildlife Commission has distributed nearly 70,000 posters designed to encourage farmers to open their land to hunting—and at the same time direct hunters to ask permission before going on private property to hunt.

Compared to other states, North Carolina has a splendid record of safety during its hunting seasons. Hunting accidents are always avoidable, and Tar Heel gunners must again this year take all the common sense precautions to avoid fatalities. Wildlife protectors over the state have distributed large safety posters to remind hunters to be careful.

It is impossible to predict whether violations of the game laws will be more or less numerous this year, but most Tar Heel nimrods are becoming aware of the strides which have been made in improving the efficiency of its wildlife protection staff. Wildlife protectors are equipped with a patrol plane, patrol boats, and patrol cars with two-way shortwave communication. In addition to this the law enforcement staff has received intensive training in law enforcement at the Institute of Government at the North Carolina University in Chapel Hill.

Following is a brief summary of the outlook for hunting during the current season:

DEER: There was no important recurrence of deer disease and screw worms which plagued deer populations last year. Deer are abundant in coastal plains counties, and plentiful enough to provide successful hunting in the western Wildlife Management Areas.

BEAR: Should be plentiful to abundant in eastern counties, with an adequate supply in the mountains. The supply of bear is reflected in another long season

State News Bureau Photo

Rabbits are still at a low point in their population cycle, but all in all, the coming hunting season should be one of the best in many years.

this year. Bear hunters are warned not to kill female bear with cubs, or cubs not accompanied by adult bear.

WILD BOAR: Hunting for this imported species is restricted to three counties in the extreme western part of the state, and most boar hunting is done only under closely supervised organized parties.

RACCOONS AND OPOSSUMS: Opossum are almost everywhere abundant, and raccoons are still considered to be over-abundant in the coastal plains section. They are relatively scarce in certain piedmont counties and are still being transplanted to those areas from eastern counties.

SQUIRRELS: An effort was made this year to adjust the squirrel seasons to local conditions. For this reason the seasons and bag limits on squirrels are more varied than in years past. Squirrel hunters should refer to the printed regulations for complete information on squirrel shooting. In general squirrel populations have held up well despite the popularity of squirrel hunting as a sport. (See page 14 for season change.)

RABBITS: Rabbits are still at a low point of the population cycle, and although there may have been some increase over last year, rabbits are nowhere abundant. Rabbit hunting is second to squirrel hunting in popularity.

QUAIL: Reports from most of the quail hunting areas in the state indicate that these birds have passed through a highly successful nesting season. Quail hunters can look forward to large and plentiful coveys in most areas this fall. A combination of a good nesting season and the results of habitat improvement accounts for the prospect of excellent quail shooting.

WILD TURKEYS: These majestic game birds have held their own in numbers, and have increased in most areas. They are nowhere abundant, however, and again the bag is restricted to one bird per day, two in possession, and three for the entire season. Gobblers or toms only may be killed this year.

RUFFED GROUSE: Although restricted to the mountain counties, ruffed grouse appear to be at the peak of the population cycle and should provide some excellent shooting for hunters with the stamina required to flush them from their mountain coverts.

WATERFOWL: The U. S. Fish and Wildlife Service, which sets the waterfowl seasons, reports a considerable increase in waterfowl populations, but considers the total number of birds low enough to prohibit an increase in the daily bag and possession limit.

SUMMARY: All in all, the coming season should be one of the best in many years. To have continued good hunting, however, there must be increasing cooperation between sportsmen, farmers, and the agency responsible for the protection and maintenance of our game species. On behalf of the Wildlife Resources Commission and myself, I urge all hunters to observe the rules of sportsmanship, conservation, and safety.

WHISKER Fish

Story and Painting
by DUANE RAVER
Fisheries Investigator

TIME WAS WHEN THE "CATFISH" received nothin but scorn and ridicule. Granted, he still is the re cipient of a lot of uncomplimentary remarks, but littl by little the tide is turning more in his favor. One o the purposes of this article is to straighten out, at leas a little, three members of the catfish family. We can just lump all the members of this whiskered tribe int the category "catfish," and here's why.

The top fish of the three shown across the page is th yellow bullhead. His scientific name is *Ameiurus natal erebennus,* but usually to most of us he is just "catfish. Three good characteristics set him apart from all hi relatives: chin barbels white or gray, never black; 23 t 26 rays in the rather long anal fin; and the almost squar or slightly rounded tail. With these in mind you can miss this bullhead.

You'll notice that all the catfishes have that littl fleshy fin near the base of their tails, which is called th adipose fin. Only the channel catfish (the middle one c the three in the illustration) has a deeply forked ta and 23 to 25 rays in the anal fin. The spots usually fad on channel cats of over 15 inches long, so don't depen on them in the larger specimens. Look for this silver catfish in fairly clean streams rather than in lakes. Th southern channel catfish carries the scientific name c *Ictalurus lacustris punctatus.*

The bottom fish of the three is the white catfis *Ictalurus catus.* In general body shape the white c looks much like his channel cousin, but never wea spots, and only has 19 to 22 rays in the anal fin. You wi notice that in most specimens the dorsal or top lobe c the tail is slightly longer than the bottom lobe, and th tail is never quite as deeply forked as it is in the chann catfish.

All three of these whisker fish are good eating whe properly cared for from hook to frying pan. The fles of the channel catfish is the best and rates along with ar trout ever eaten. And don't underrate any of them fighters. Here again the channel comes out ahead an will give you a scrap any time you tangle with hin

We're stuck with the catfishes (in more ways tha one) so why not give them a chance on the fishing rc and on the dinner table?

D. RAVER

Sporting Firearms Manufacturers Continue Their

EDUCATIONAL

AFTER WORLD WAR II interest in the sport of shooting reached new heights and the Sporting Arms and Ammunition Manufacturers' Institute recognized more than ever that its responsibility was to direct the new shooters—especially youngsters—into supervised shooting activities.

The Institute, along with many other groups throughout the country such as sportsmen's associations, boy scout leaders, law enforcement agencies, summer camps and others feel that every active boy should be taught the fundamentals of safe shooting and proper gun handling. As a result he will learn the principles of good marksmanship and good sportsmanship which will stand him in good stead all through his life, and even more importantly, will contribute to his self-reliance. The youngster who receives proper instruction in handling firearms today—also in the obligations that go with that privilege—should develop into the true sportsman of tomorrow.

Records show that boys and girls of almost any age can be given a rifle safely, if they are taught how to handle that firearm properly so that such use will be with complete safety to himself, and to other persons and property. In fact, some authorities feel that with proper instruction, youngsters are inclined to be more careful in the use of firearms than are their elders.

To assist parents and other adult groups in training youngsters to handle firearms in the proper manner, the Sporting Arms and Ammunition Manufacturers' Institute has sponsored the Ranger Program for new shooters. As part of the plan, the Institute has published *How To Be An NRA Ranger* and *Aiming For Sport.* The latter booklet is the instructional manual for the program and was prepared primarily for adult supervisors or instructors of youth groups interested in shooting sports. The booklet is, however, furnished also to youngsters who do not have access to adult supervision, in order to impress them with the necessity of exercising every precaution in choosing safe places to shoot. It also stresses the importance of seeking the help of adults, or experienced shooters, who can supervise their shooting to insure the adoption and continued application of safe practices in handling sporting firearms, and in the selection of proper equipment.

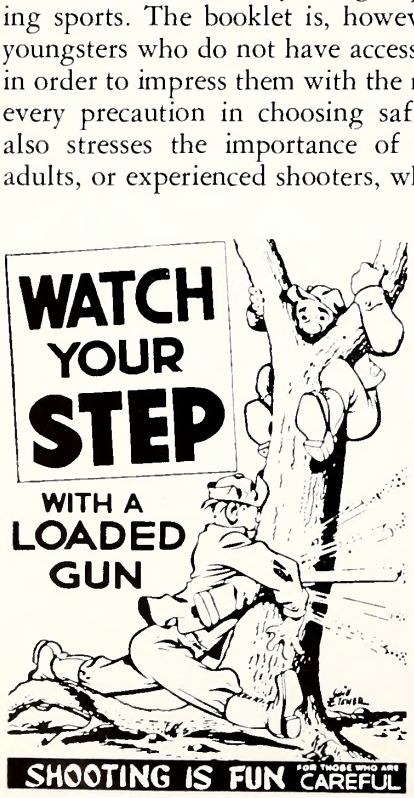
Another booklet, entitled *More Fun With Your 22 Rifle* was published shortly after the inauguration of the *Ranger* program because the Institute recognized the need for directing new shooters—youngsters particularly—toward safe, interesting and wholesome shooting activities, thus eliminating less desirable types of "plinking." The National Rifle Association, Washington, D. C., developed especially for the games described in the booklet, the black Bustible Bullseyes and they have proven extremely popular with plinkers.

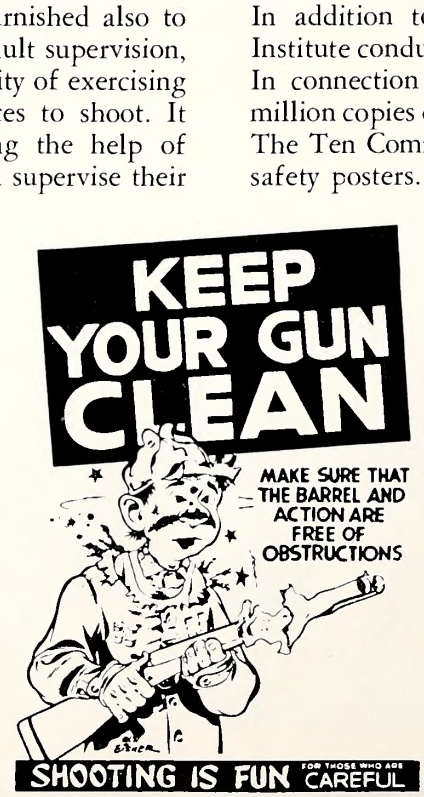
Safety Film

To responsible groups or organizations desiring to instruct boys and girls in proper handling of firearms, the Institute also offers free of charge, other than transportation costs, use of its instructional-safety film *The Making of a Shooter.* A folder describing this excellent kodachrome film and copies of the other booklets and N.R.A. Ranger targets are obtainable upon request from the Institute's SPORTSMEN'S SERVICE BUREAU, Dept. RW, 343 Lexington Avenue, New York 16, N. Y.

Ten Commandments of Safety

In addition to its educational *Ranger* Program, the Institute conducts also an Accident Prevention Program. In connection with that project it has distributed 40 million copies of a leaflet entitled *Watch That Muzzle*—The Ten Commandments of Safety, and a series of six safety posters.





by C. Stewart Comeaux

ACTIVITIES

The Ten Commandments of Safety are:

1. Treat every gun with the respect due a loaded gun. This is the cardinal rule of gun safety.
2. Carry only empty guns, taken down or with the action open, into your automobile, camp and home.
3. Always be sure that the barrel and action are clear of obstructions.
4. Always carry your gun so that you can control the direction of the muzzle, even if you stumble. Keep the safety on until you are ready to shoot.
5. Be sure of your target before you pull the trigger.
6. Never point a gun at anything you do not want to shoot.
7. Never leave your gun unattended unless you unload it first.
8. Never climb a tree or a fence with a loaded gun.
9. Never shoot at a flat, hard surface or the surface of water.
10. Do not mix gunpowder and alcohol.

Supplies of this leaflet are obtainable without charge by any group desiring to distribute them. A large size (12 x 18 inches) placard containing the text of the Ten Commandments of Safety is available for use in club rooms, etc., by writing S.A.A.M.I., 343 Lexington Avenue, New York 16, N. Y.

Safety Posters

These were first distributed gratis by the Institute in 1941 in a test campaign in ten selected states for posting in hunting areas, clubs and other strategic places where hunters congregated. In 1950 twenty states were so interested that they agreed to bear half the cost of printing a new series of safety posters and about 85,000 were ordered from the Institute. Twenty-eight State Game Commissions will use approximately 100,000 posters just prior to the 1951 Fall hunting season.

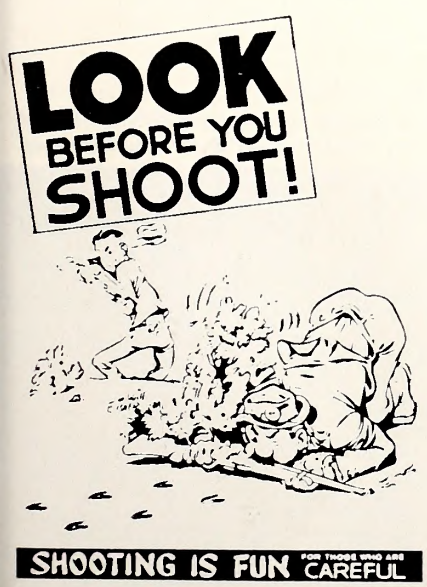
The new three-color posters (size 12 x 18 inches) stress by means of a humorous approach such gun safety themes as LOOK BEFORE YOU SHOOT; WATCH THAT MUZZLE; WATCH YOUR STEP; KEEP YOUR GUN CLEAN; IS THAT GUN LOADED? and GUNPOWDER AND ALCOHOL DON'T MIX.

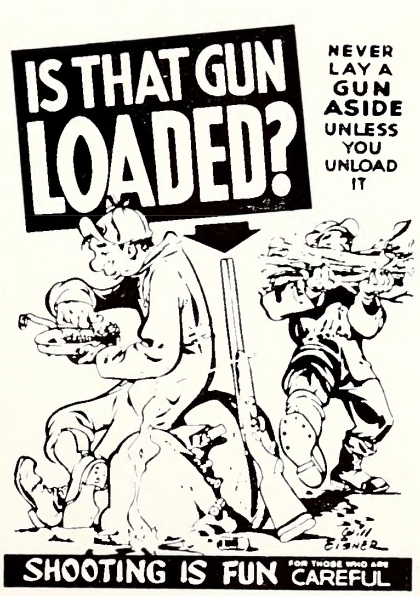
The states cooperating in the Institute's 1951 program include Alabama, Arizona, California, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Nebraska, Nevada, New Jersey, North Carolina, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Wisconsin and Wyomining. In addition to state use, various sportsmen's groups in other states have purchased their own supplies.

In the ten years through 1951, approximately 800,000 posters will have been distributed, and from 1940 through 1950 there has been a percentage-wise reduction in fatal hunting accidents from 6.4 per 100,000 licenses in 1940 to 2.6 in 1950, and a reduction in non-fatal mishaps from 30.5 to 26.3, although in the interim some years were more favorable—1945 showing a rate of 20.6, and 1948 a rate of 21.8 non-fatal accidents per 100,000 licenses issued respectively. The poster program has obviously contributed to this desirable reduction in preventable firearms accidents as an especially developed project; as well as by its encouragement of other over-all safety programs. While there appears to be only a small reduction in the *actual* number of yearly accidents, consideration must be given to the fact that the nation's hunters increased from 7,646,193 in 1940 to 12,626,539 in 1950, the peak year being 1949 when 12,758,698 hunters were in the field.

Groups or organizations which are interested in cooperating in accident prevention programs to reduce

See EDUCATION Page 20





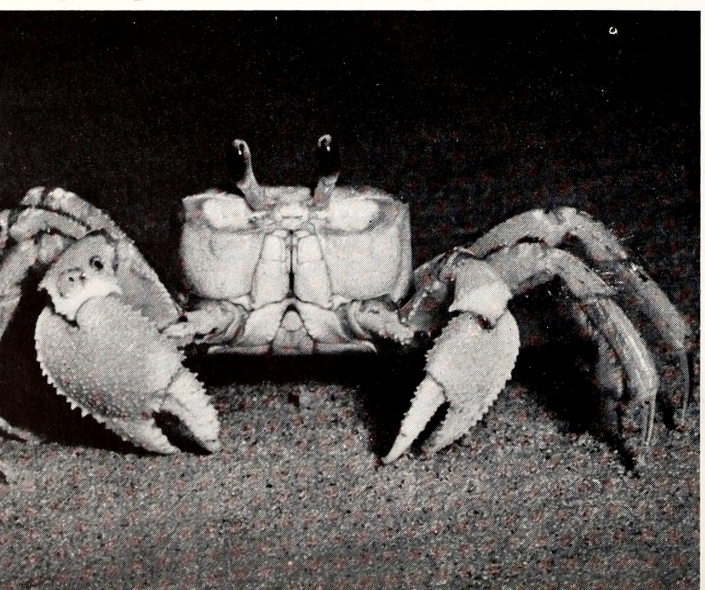
Everybody likes a white-tailed fawn—its big friendly eyes, confiding ways, and sheer daintiness. Fawns lose their white spots in about four or five months.

The spadefoot toad has eyes to be
can be lowered even with the surface

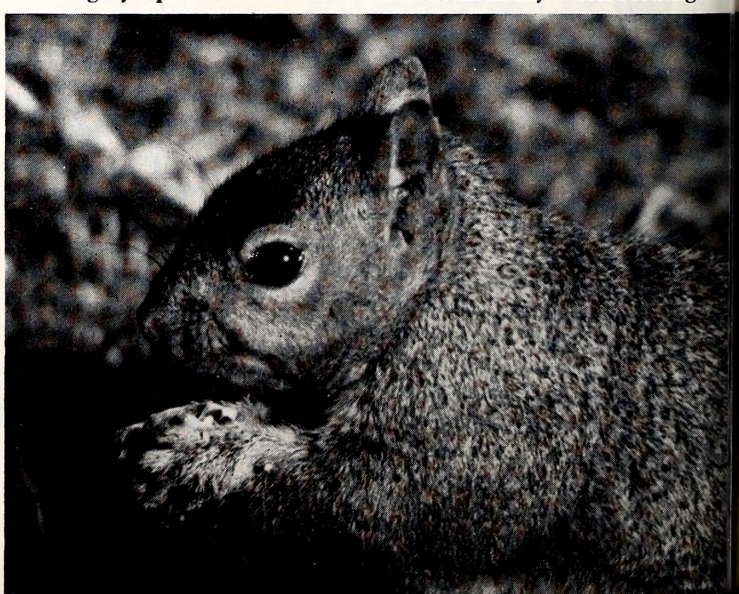
Anim

There are all kinds o
large and small, bea
by our standards —
personality. Here eye
human expressions o
in animal portraits.

The sand or ghost crab of the ocean beaches does not really have a face. Its compound eyes are mounted on movable, periscope-like stalks.



Typical rodent features can be identified in this profile of a gray squirrel. It uses its front feet skillfully when feeding.



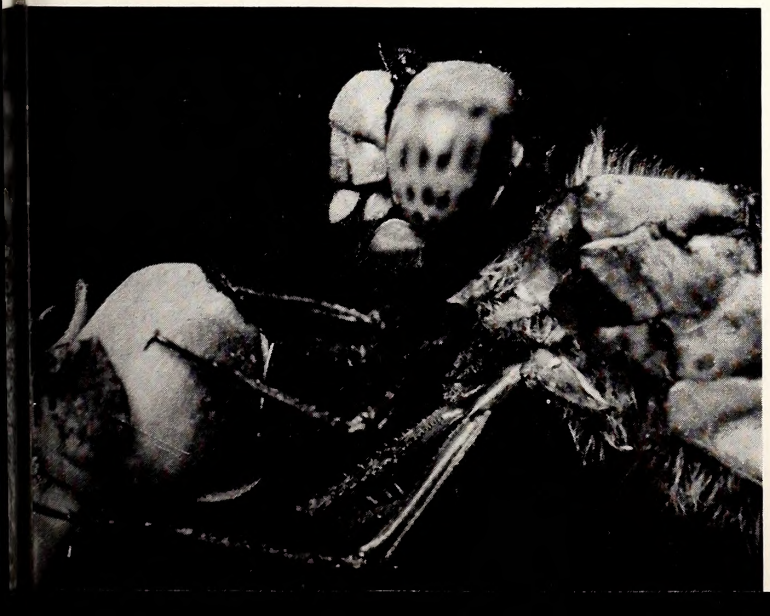
hough prominent and bulging, they
nen it burrows underground.

Faces

the animal world —
y, and even fantastic
ve a very distinctive
attention. Sometimes
lances can be found
ou see in these?

No duck is more beautiful than the drake wood duck. Nature gave it generous portions of color, iridescence, and handsome markings. It occurs throughout North Carolina.

Monster from another world? No, just a dragon fly's portrait. Greatly enlarged, insect faces appear fantastic and unreal.



"Duh—I'm in no hurry, Doc." The box turtle cannot hurry with its heavy shell, but it can hide its face in record time when disturbed.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Waterfowl Seasons and Bag Limits Announced

Tar Heel wildfowlers get a five day bonus this year with a season that opens November 22 and extends through January 5. No increase in bag limits was granted by the U. S. Fish and Wildlife Service to states in the Atlantic Flyway, and the bag limit on coots was reduced from 15 to 10. Shooting hours are from one-half hour before sunrise to one hour before sunset. On opening day shooting begins at 12:00 noon.

Following are dates and bag limits (all dates inclusive):

Ducks: November 22-January 5, with four birds per day and eight in possession. One wood duck will be allowed in possession at any time and hooded mergansers (hairy crowns) count as ducks in the bag limit.

Geese: November 22-January 5, with the bag limits including not more than two Canada geese or white-fronted geese or one each of these species per day or in possession. In addition three blue geese may be taken daily and had in possession at any one time.

Brant: For the first time in several years Tar Heel wildfowlers will have a chance to shoot brant. The word "brant" includes only American and black brant and does not mean snow geese, which are sometimes called white brant. The season for brant is from November 22 to December 1, with three birds allowed per day or in possession.

Mergansers (American and red-breasted): November 22-January 5, with a bag limit of 25 singly or in the aggregate of both kinds, with no possession limit after the opening day.

Coot: November 22-January 5, with a bag limit of ten per day and ten in possession. This is a reduction from fifteen permitted last year.

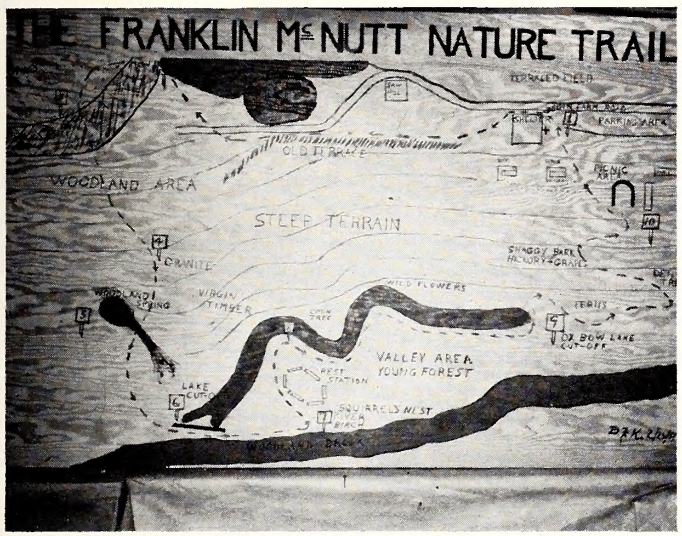
* * * *

Squirrel Season Changed In Part of State

Squirrel hunters in Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Polk, Swain, and Transylvania counties should take note of the fact that the Wildlife Resources Commission has changed the season in those counties from a split season of September 15-October 1 and November 22-January 15 to a single continuous season from September 15-December 1. This means that no squirrel hunting will be permitted in these counties during the 1951-1952 season after December 1, 1951.

Nature Trail For Elementary Children

by Dale F. Keller
Director, Audio-visual Education
Greensboro Public Schools



A schematic drawing of the McNutt Nature Trail showing the location of points of interest.

EXPERIENCE IS THE GRASS ROOTS of all learning. With this in mind, the Franklin McNutt Nature Trail was created. The primary objective of the nature trail is to demonstrate the balance in nature with emphasis on soil and water conservation. Plants and animals are considered incidental except for their interrelationships in demonstrating the balance in nature. One big idea is considered which can be demonstrated during all seasons and adapted to any grade level.

Criteria had to be established suitable for the non-specialized elementary teacher and children. A group of outstanding educators and scientists formulated criteria for a nature trail for elementary children. [Copy of the Criteria Study will be sent by the author on request.] The trail must be different from the camp and park trails generally known. The following points were significant:

1. The trail must be located far enough away from the urban surroundings to find nature undisturbed, but within commuting distance of the school.
2. Typical flora and fauna of the region must be present.
3. The trail should pass by a brook or lake.
4. The path should be wide enough to allow teachers and children to walk with ease. The trail should not cross at any point and should not be over two miles in length.
5. Adequate toilet and water facilities should be present.
6. First aid cabinet must be present.
7. A parking area and shelter should be constructed.
8. Signs should be few but give clear directions and indicate areas of importance.

In the interest of the children and teaching of science, Dr. and Mrs. Franklin H. McNutt gave the Trustees of the Greensboro Public Schools a ten-year lease on a portion of their farm located eight miles east of Greensboro on the McConnell Road.

Due to the wise leadership and interest in outdoor education of Superintendent B. L. Smith, the Board of Trustees accepted the lease. The responsibility for developing the trail was placed with the Audio-Visual Education Department. The Greensboro Jaycees furnished funds to build toilets. The Board of Trustees accepted the maintenance cost of the trail.

The trail had to be constructed and the teachers prepared to use it. A course in elementary science was offered by the Graduate Center of the University of North Carolina at Greensboro to form the nucleus of teachers' interest. The course consisted of finding things on the school grounds for teaching elementary science. A trip to the nature trail was made. Interest spread like wild fire. However, some of this interest had to be curbed since there were more requests than could be accommodated, and rigid classroom preparation was required. The department was determined that this would not be just another trip.

Briefly the teacher preparation consisted of:

1. An abundance of reading and audio-visual materials.

See NATURE TRAIL Page 22

Photos by Dale F. Keller

The story of soil building can be readily understood by the pupils after seeing the process in action at an old rotten stump.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

Why are the bream so small in our city park lake?

Yours truly,

Joe Doaks

Dear Joe,

The bream are small because there are too many of them and there isn't enough food to go around. True, it is a ten-acre lake, and being reasonably fertile it produces a lot of food. That food will support a definite number of pounds of fish. It makes no difference whether each pound of bream is made up of two half-pound fish or sixteen one-ounce fish; they stop growing when they reach the limit of their food supply.

That lake is just like the pasture on your farm, Joe. Each year you raise two steers for your own freezer locker and four more for market. Why don't you raise ten for market, or even twenty, on that same pasture? Sure, you'd be nuts to try it! They probably would starve to death!

That is the difference between steers and fish, Joe. The steers would starve to death, but the fish become stunted and stop growing, or even shrink in size, when there isn't enough to eat. If more of them would starve to death, you "City Fathers" would have no problem with your lake. As it is, you have ten acres of water full of bream. Most of them are big enough that the bass have difficulty in swallowing them, and yet they are so small that the youngest fisherman is inclined to throw them back to grow up when he catches one.

It was most interesting to seine up some of those bream the other day and to look at their scales. Like the girl on the reducing diet, it's the scales that tell the story! You will remember that the largest bream we found was less than five inches long. Believe it or not, Joe, that fish was in his fourth year. He would die of old age long before getting big enough for the frying pan. There were other smaller ones in their third year. The smallest we found were about two inches long, and they were in their second summer. It is particularly significant that we found no young of the year.

In every pond where no young of the year are found, some kind of trouble can be expected. Usually it is just the same situation you have in your city park lake. There are so many little hungry fish looking for food that every egg is eaten before it hatches out. The male bream guards the nest the best he can; but when all those starving fish see the eggs, he just hasn't a chance. They even raid the bass nests when they get hungry enough, too. Papa bass can lick them one at a time, but when dozens of the little fellows gang up on him they get away with most of the bass eggs in spite of his defense.

You remember that we found two little bass in the weeds along the shore; only two of them, and they were not over an inch and a half long. At this time of the year, last spring's crop of bass should be from three to five inches long or even more if they had plenty of food. The two little fellows we saw were still in the insect feeding stage, and needed the same kind of food that the thousands of bream had long since cleaned up. They were as nearly starved as two little bass could be and still live.

Those bream scales showed in another way just how serious the over-population is in this lake. Remember the die-off in the early summer of 1950 when so many fish died that you folks were sure there would be none left? The three- and four-year-old fish grew just about twice as much in 1950 as in any other year. There was more food for each fish that was left in the lake and their growth rates showed it.

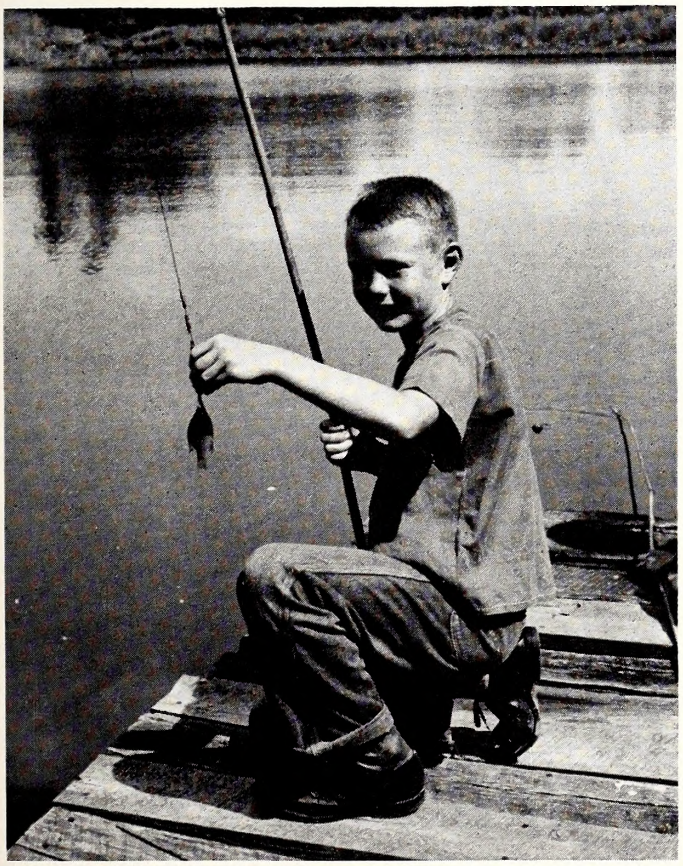
Fortunately, the lake has a control valve, and you can drain out as much water as you want. This situation can be corrected by draining the lake down to such a depth that you can get in there with seines and take out every bream you can find.

You probably will have a tough time selling the other "City Fathers" on this idea, and an even worse time selling the good citizens of your town that the right thing is being done. It is unfortunate that for the last hundred years or so, fish management has consisted almost entirely of raising fish in hatcheries and dumping them wherever the fishing was getting poor. People generally are sold on this idea. When they see some little hatchery fish going into the local pond, they all feel sure that the fishing will be fine next year. And

when it is not improved as a result, they do not stop to think—they just yell for more fish from the hatchery!

Some fish stocking is necessary, much of it is absolutely wasted and makes no difference to the fishing, and some of it is an actual detriment to the existing populations. You can see how much good it would do to put more fish in your city lake. It would just make a bad situation worse! When the day comes that people realize fish are like other animals and have to have plenty of food and a suitable place to live, and that no amount of stocking can take the place of natural reproduction, then we can worry less about hatchery production, and more effort can be directed toward improving the fishing.

It is greatly to your credit, Joe, that you did not ask to have the lake "restocked." When the interested citi-



The way to prevent an overpopulation of tiny, adult bream is to maintain fishing pressure great enough to create a balance between fish numbers and the food supply.

zens of your town suggest it, tell them that it will be done in good time.

The first thing to do is to take out every bream you can pick up in the seines. That does not mean to just make a few casual hauls and take out a few thousand fish. It means that the lake must be drawn down so you can work every inch of it, and that you must keep on seining until no more bream can be found. It must be a thorough job or the effort will be wasted.

You will miss some, and the ones that are left will have enough food to grow a lot by next spring. When you recall that each pair remaining in the lake will produce about ten thousand eggs next year, you can see that even two completely successful hatches would overpopulate the lake again. To help prevent this, we will stock the lake with enough bass to eat most of the little bream before they have time to grow into the intermediate size that occupy the lake now. That kind of stocking is the real purpose of raising fish in hatcheries. We must try to return the population of the lake into a reasonable balance between predators and prey. Unless the bass eat nearly all the little bream, the lake will soon return to its present situation.

There is one other way you "City Fathers" can help prevent this from happening again. See to it that more fish are caught by fishermen! It is understandable that in a small lake like this you do not consider it advisable to open it to the public for boating. Since fishing must be restricted to the shore line, most fish in the lake will never see a hook or a bait. In a sincere effort to improve the fishing, you have restricted the fishing to children only and to two days a week. You see that it did not solve the problem. Since it is obvious that a lot more fish must be taken out than you have been in the past, why not leave the lake open for fishing seven days a week? And why not get Papas and Mamas and Sisters to come help catch these fish? If they catch too many, the ones that are left will just stop biting for a few days until they grow up to the limit of the food supply again. A *lot more fishing* will help your lake, and at the same time it will provide the best of recreation for the people of your community. Try it, Joe!

Best wishes,

Harry Cornell

Annual Wildlife Federation Meeting At Asheville

The Buncombe County Chapter of the North Carolina Wildlife Federation will play host to the annual meeting of the Federation this year. The meeting is scheduled to get under way Monday, October 8 and last through Tuesday evening, October 9. Headquarters for the event will be the Battery Park Hotel, and registration begins Sunday night, Oct. 7.

A highlight of the meeting will be the selection of Miss Wildlife of 1951 in the Rhododendron Room during the afternoon of the 8th, and in the main ballroom that evening will be a banquet at which awards will be made to the winners of the Wildlife Essay Contest held last spring, and to the winner of the Miss Wildlife beauty contest. Following the banquet will be an old-fashioned hoe-down.

Many wildlife clubs throughout the state have already selected their candidate for the Miss Wildlife title, and those who have not already done so should select a contestant at once.

Ross O. Stevens, Executive Secretary of the Federation, and Roland McClamroch, President, have urged that all members of the Federation attend the meeting, and make their reservations early.

Notes from the field

Multiflora Rose in Southeastern North Carolina

THE QUAIL POPULATION in the southeastern section of North Carolina is one of the highest to be found anywhere in the South. The bobwhite has held its own against weather, predators, and food conditions for many years. Now, with the increase in hunting pressure, it must have a little help.

Multiflora rose, an import from Asia, has been introduced to furnish food and cover for quail and other forms of small farm game. This rose is of the bush type and grows to a height of six to eight feet in suitable soils. Multiflora seedlings are planted one foot apart in single rows. After about two years, with reasonable care the hedge will become a source of food and cover for the small wildlife usually found on farms in North Carolina. In another year or two the hedge will be a living fence, capable of turning farm livestock.

In the early spring the row of rose bushes becomes covered with small pinkish-white flowers about the size of a man's thumbnail. As the blossoms fall, small green pips are left to mature into red seed pods in the fall. The pods are about the size of number one buckshot when fully mature.

The care of multiflora rose is similar to the care afforded to garden types of roses. Multiflora is not subject to as many of the diseases as the cultivated types. The main thing in securing a good multiflora rose stand is the care in setting out the young plants and the cultivation of them during the first year.

Green or well-rotted cow manure is one of the best fertilizers that can be used. Other kinds of organic manures should be used with extreme care.

The preparation of the site for roses is of prime importance in the successful cultivation of the stand. If time permits, a trench should be dug to a depth of at least one foot and two feet in width for the length of the hedge to be planted. A terracing machine, small tractor dragpan, or double mouldboard plow may be effectively employed to prepare the site. Save the soil removed from the trench and mix it with the manure. Use at least 200 pounds of manure per hundred feet of trench. Before filling the trench with this soil mixture put about four inches of cinders or other coarse material in the bottom of the ditch. The purpose of the cinders is to insure good drainage and therefore good aeration.

Multiflora rose requires good soil to have the best growth. Deep sands and soggy organic soils are not suited to its cultivation. Sandy soils, that are common in the southeastern counties of North Carolina, need to have a high ratio of organic materials mixed in with the soil to support the rose. With reasonable care in site selection, preparation, and cultivation a good stand of multiflora rose may be obtained. If clay soils are available they should be considered in preference to other types.

Planting care cannot be stressed too much. The photographs included show three different sites and three methods of planting and cultivating multiflora rose.

Mr. W. T. Hughes of the Hughes Brothers Fuel Company in Wilmington set out the three sites in the spring of 1949. The large growth of rose was set out in fertile soil that was prepared by turning it over a number of times and mixed with manure. The soil was

This vigorous multiflora hedge was planted in fertile soil that was prepared by turning it over several times and mixing with manure.

Planted in tight and poorly aerated soil, this rose planting attained only one-third the growth of the above one during the same period.

This planting on poor, sandy, very dry soil has grown only about eight inches. All three rose hedges were set out in the spring of 1949. Photos by Walter Price

loose, slightly dark, moist, and had good aeration. Mr. Hughes cultivated around these roses two or three times during the first year of growth.

The second photograph was taken of another hedge about fifty yards from the first hedge. This hedge was planted in soil that had been packed by oil trucks and had been covered with cinders. Mr. Hughes cultivated these roses at the same time that he cultivated the first hedge. In this tight and poorly aerated soil the growth is only about one third of the first hedge.

The third photograph is a hedge Mr. Hughes planted the same day and with the same rose stock that he planted the first two hedges. This planting was on poor, sandy, and very dry soil. The hedge in this photograph has grown only about eight inches since it was set out in the spring of 1949. This site was fertilized with organic and commercial fertilizer at the time it was set out and has been top dressed once since then. The nature of the soil caused a bad leaching problem. This type of site should not be selected if it is at all possible to secure a better place.

Multiflora rose is being used by farmers for a dual purpose. One use is to have a fence that is livestock-tight and self-maintaining; the second is for a wildlife border that affords protection and food for farm game. In every instance the young rose bushes should be planted where livestock cannot browse the plants until after the second year. It is advisable to prevent livestock from browsing multiflora rose until the fourth year. After the fourth year livestock prune the bushes by nipping the young tips from the plants and keep the bushes in shape.

Multiflora rose has not become a nuisance on any farm in North Carolina to the knowledge of the Wildlife Resources Commission. If at any time it is desirable to destroy the planted hedge, disking and shrubbing will eradicate the planting.

The North Carolina Wildlife Resources Commission will furnish moderate amounts of seedlings to farmers and sportsmen to plant on their farms and hunting preserves for the betterment of sport and quail habitat. Get in touch with the district biologist in your wildlife district, and he will be glad to come and advise you. The name of the biologist in your district may be secured by writing to the Wildlife Commission in Raleigh. —*Walter E. Price, Refuge Manager, Sandhills Area.*

Raccoon Predation in Lennon's Marsh

LENNON'S MARSH IS A VAST 1100 ACRE horseshoe-shaped wilderness of cypress swamps, marshes, shrub bogs, and open lagoons. Located in Robeson county, it is one of the last strongholds of the alligator in North Carolina and a favorite nesting ground of wood ducks, herons, egrets, and other species.

Last June 15, James L. Stephens, Jr. and Dr. W. W. Parker of Lumberton and I waded into the upper eastern section of the marsh to photograph alligator sign and to band young herons and egrets. Because of prolonged drought and a break in the old mill dam at the southern extremity, the water level was more than a foot below normal. The marsh appeared devastated with water lilies turned on end and other aquatic plants drooping heavily over the shallow water and mire.

Bird life was normal in the rookery occupied mostly by little blue herons; but when we entered the small cypress grove that is used annually by nesting American egrets, we found a totally different picture. Compared to the little blue rookery, it was like a ghost town. The sight of empty nests and remains of dead nestlings and the powerful stink of rotting flesh were gruesome. The destruction was almost unbelievable to Stephens, who had banded birds in the same, but teeming, community several weeks before. Only a few live nestlings remained in the rookery. They were in the highest treetops, where they apparently escaped death by climbing among the small branches of the cypresses. Many nests were seen with the necks of one to three young egrets hanging stiffly over the side. Several nests held both alive and partly devoured young.

Many feet, bills, feathers, chewed bones, and other remains were scattered over the wet mud beneath the trees. I will never forget the pitiful condition of two young egrets that we found struggling from place to place. Part of the tail end of each bird had been bitten off. The bloody wounds contrasted sharply with their white plumage. They were truly the "living dead."

Circumstantial evidence pointed to the raccoon as the predator that ravaged the egret rookery. Raccoon tracks and droppings were abundant. Mink may have helped, since they are present in the marsh; but no mink sign was noted.

Stephens pointed out that this was the first time he had ever observed largescale predation in Lennon's

Bottom view of an egret's nest showing the head and neck of a dead youngster draped over the edge.

Although partly eaten, this young egret was still alive and floundered about pitifully in the mud.

Marsh during his many visits. Except for the war years, he has kept a close tab on the nesting birds of the marsh since 1928. Alligators, of course, have always served as scavengers in cleaning up young birds that happen to fall from their nests. Stephens added that the water level was at a record low. Usually a foot or more of water stands under the egret rookery.

Why had the raccoons raided the rookery this year and not before? It is surmised that low water permitted easy access to the isolated cypress grove. Although the raccoon is a good swimmer, it is possible that the combination of deeper water and dense aquatic vegetation previously formed an effective barrier.

Why had the little blue herons escaped while the egrets were slaughtered in large numbers? The answer may be found in the difference in the placement of the nests by the two species. The egret nests were built in sturdy and easily climbed cypress trees. The large nests made excellent banquet tables for the raccoons, and there were few places where the nestlings could climb to escape. The little blue heron nests, by contrast, were in flimsy bushes or smaller trees and protected by a tangle of cat briars, making it more difficult for the raccoons to climb to the nests while providing many routes of escape for the young herons. In addition, some water still remained in the rookery.

It is regrettable that an accurate count of the destroyed egrets was not taken. Predation is a continuous and common occurrence in the outdoors. However, its results are seldom observed on such a large scale. — *Jack Dermid, Managing Editor*

EDUCATION

from page 11

the hunting accidents in their states can purchase supplies of the posters at one-half the cost of printing by writing C. Stewart Comeaux, Secretary, Sporting Arms and Ammunition Manufacturers' Institute, 343 Lexington Avenue, New York 16, N. Y.

Educational Handbooks

Finally, recognizing that a proficient shooter is more likely to be safety conscious, the Institute also published some years ago two booklets entitled *Handbook On Small Bore Rifle Shooting* and *Handbook On Shotgun Shooting*. Revised 1950 editions of these handbooks are being distributed by the Institute's SPORTSMEN'S SERVICE BUREAU at 25 cents per copy to cover handling and mailing. Since their publication 325,000 copies of the rifle handbook and 150,000 of the shotgun handbook have been made available to the public, which is indicative of the regard shooters have for these publications.

The latest Institute publication is entitled *What Every Parent Should Know When a Boy Or Girl Wants a Gun*. It was prepared for the purpose of assisting parents in arriving at their own conclusions as to when their youngsters can be regarded as qualified for the safe handling and use of 22 caliber rifles. Copy of this booklet is also being sent you.

WILDLIFE PROTECTOR SCHOOL

Protector W. B. Peeler of Rutherford County is shown receiving his diploma from W. C. Bumgarner, Institute of Government, during graduation exercises recently at the Wildlife Protector School held in Chapel Hill. Shown in the congratulatory line-up are (left to right) E. W. Machen, Institute of Government; G. A. Jones, Jr., Chief, Wildlife Protection Division; Clyde P. Patton, Executive Director, Wildlife Resources Commission; and Hayden W. Olds, Assistant to the Executive Director.

The Wildlife Protector School is conducted by the Institute of Government, a division of the University of North Carolina, and the Wildlife Resources Commission. It is designed to give our wildlife protectors basic instruction in subjects used regularly in their work. A few of the courses included were game laws, court systems, laws of arrest, search and seizure, and evidence, public speaking, self-defense, first aid, and handling of firearms.

This year the school was divided into three sessions. The first session was unique in that of 43 men enrolled, twelve were prospective wildlife protectors taking pre-service training. The remaining men were protectors employed since last year's school was held. The second and third sessions, with enrollments of 51 and 52 respectively, were designed as a refresher course for all wildlife protectors not attending the first session.

Now is the time to begin placing orders for bicolor lespedeza and multiflora rose. Consult or write your district biologist.

Addresses of District Biologists

District 1
Ben H. James
Route 3
Williamston

District 2
A. D. Ennett
Swansboro

District 3
Charles B. Woodhouse
Holly Springs

District 4
Sam F. Poole
200 West 8th Street
Lumberton

District 5
Position temporarily vacant
Write Raleigh Office

District 6
David L. Taylor
P. O. Box 91
Hoffman

District 7
Ted R. Mitchell
907-A4 N. Center St.
Statesville

District 8
Robert B. Hazel
Route 2, Box 300-A
Morganton

District 9
Rex L. Bird
1619 Kensington Drive
Hendersonville

GET IT OFF YOUR CHEST!

EDITORIAL COMMENT, LETTERS TO THE EDITOR AND ANECDOTES

Conducted By Win Donat

THE ANNUAL MEETING of the North Carolina Wildlife Federation at the Battery Park Hotel, Asheville, on October 8 and 9, offers a challenge to the sportsmen which cannot be neglected. In the face of the critical times ahead for our state and nation, surely the sportsmen who, after all, are the ones primarily interested in hunting and fishing, should recognize an increased responsibility. One of the main objectives of the annual meeting is to emphasize this responsibility. While districts, counties, and clubs are represented, the individual member is the key to the success of the Federation and its program, as well as the success of the Commission and its program. It is the individual who must suggest an activity at a club meeting when only a few show up; likewise, the individual must accept and execute job responsibilities when asked to do so. His enthusiasm must be a contagious disease. Fortunately such a crusading spirit *can* result in many satisfying experiences and the ultimate effect is the creation of a stimulus in the club that, once started, has a snow ball tendency.

We need more and bigger clubs now more than ever. We need club programs directed to and including the young folks and the women. We need a program of fun for all, contact between folks from the far corners of the state and a greater realization of our responsibility to our hunting and fishing resources.

There is no hard and fast formula guaranteed to provide the successful club program. The "Miss Wildlife" contest which is now a popular feature of the annual meetings, started at the Nags Head meeting a few years ago as a frivolous bit of horseplay. The trials sponsored by the Federation with the Wildlife Commission cooperating take more time to get established, yet the beaglers have held their championship and the fox hound championship will begin at the Caswell Area the day after the Federation meeting closes.

We are only now breaking the ice on the type of program that will make the Federation really grow, but the continued chopping by those individuals who have been the spark plugs plus the recruits who have caught the enthusiasm, will clear the way for more sport for more people and an equal opportunity for everyone to enjoy it.

W. D.

Mr. C. W. Wall, RFD 3, Axton, Virginia, writes as follows:

"A friend of mine read an article recently by you on the abundance of coon in your part of the country and gave me your address, as I am a coon hunter and love the sport of catching them.

"I think I have some of the finest dogs in the country, and would pay a guide that knows the country if you would line up one for me, or I would like to go with you if you like the sport.

"As for coon here, they are very scarce. I will appreciate any help you can give me such as local laws, addresses of people that like to hunt, or anything that would get me in touch with a few coon."

It seems to me that a request such as this is one that should interest some of our eastern cooners. While we may complain of coon damage to crops, here is a man who loves the sport yet lives in a part of the country where coons are scarce. How about it fellows? Won't some of you take up this hunter and send him an invitation to come down for some real fun?

Mr. Jack Gilliam of Thomasville, North Carolina, asked some time ago, "I would like your opinion of the Bassett hound as a rabbit dog, as I have heard and read much about them, and know absolutely nothing of their comparison to the beagle as a rabbit dog; in fact, I have never seen a Bassett hound and would like to know more about them."

If the writer of this letter or anyone has the idea that the Bassett hound is an inferior rabbit hound, he could be mistaken. It is true that the beagle is faster and more popular, nevertheless his nose is no better and his voice is not as melodious. The Bassett is a heavier bodied dog and a slow, careful hunter. He is obedient, well disposed and is capable of being a very solid citizen. Bassetts have been trained to tree game, hunt birds or run foxes. Some say his nose ranks second in the hound group to the bloodhound.

The May, 1951, issue of WILDLIFE IN NORTH CAROLINA carried a letter in "Get It Off Your Chest" from a man who pointed out that the available hunting territory was being bought up by outside interests to the disadvantage of the hunters. The following letter from Mr. J. T. Lea, Jr., of the Riegel Paper Corporation, to Mr. E. Spencer of the

Dillard Paper Company, Charlotte, North Carolina, is published for the information of those who are interested:

"The copy of WILDLIFE IN NORTH CAROLINA which you sent up here some time back has been passed as you desired to the powers that be. In answer I have been given a letter from Riegel's Woodland Corporation giving data regarding hunting in our woodlands.

"It seems that hunting is permitted on our woodlands on a lease arrangement whereby clubs formed of five members or more, lease three to four thousand acres for hunting. Preference is given to local counties although there is no discrimination.

"This arrangement has worked out satisfactorily and as far as I can figure we have no criticism of those who have used our woodlands for hunting. They undoubtedly have abided by our regulations. There seems to be a good deal of adverse feeling among the local landowners as well as the larger landowners when hunting is allowed on any other basis than the lease arrangement. I gather we will continue with this arrangement as it seems most satisfactory.

"The question of fishing has come up several times and for your information we have a 2,000 acre settling area where the pulp liquors are filtered for one month before they reach the river. It is figured that the liquor by that time is in such small concentration that it will not affect fishing on the Cape Fear River.

"I hope these explanations are satisfactory for my 'Wildlife' friend from Charlotte, North Carolina."

Mr. L. C. Vaughan, Jr., of Greensboro, North Carolina, writes as follows:

"I attach hereto my $1.00 for which please send WILDLIFE IN NORTH CAROLINA for the next two years to Master Harold Lineberry, RFD 1, Franklinville, North Carolina.

"This young man has been very helpful to me in helping me plant bicolor for several years. If you could spare a minute or so of your time to drop him a line thanking him for his interest in wildlife conservation, I would appreciate it very much and I am sure it would make quite an impression on him."

For one reason or another this letter was not noticed until recently and it is included not only to recognize the young man who is such a friend of wildlife, but the sportsman who, by his interest in the youth, is recognizing the fact that "we can't take it with us." This fact is the very heart and essence of conservation and training the young folks in the philosophy of sportsmanship and conservation is a satisfying duty.

Wildlife Protector Roland Koontz of Ashe County tells this one: Two boys were fishing in a hole on the south fork of the New River near Jefferson recently. They were using crayfish for bait and had strikes within seconds of each other. The actions of their fish indicated that higher strategy was needed, so they decided to move the scenes of battle apart in order to avoid a conflict of lines. One moved upstream, the other downstream. When they were separated enough to bring pressure on their fish, it came to the surface. Yes, a fifteen and three-fourths inch smallmouth had nailed both baits! Which one landed the fish we don't know.

NATURE TRAIL

from page 15

2. Trail or pre-field trip on the school campus to demonstrate nature trail courtesy and citizenship.
3. Under the guidance of the teacher the children planned all phases of the trip.
4. The teacher must study the schematic of the nature trail with a description of the areas of interest.
5. The teacher must make a pre-visit to the trail.

If a class does not make the above minimum preparation for the trail activities, the request to go on the trail is refused.

No attempt is made to show the unusual. Emphasis is placed on the common place object which will help to demonstrate the main objective of the trail — the balance in nature. For example, an old rotten stump was studied but what else! The fungi and beetles are helping to decay this old stump and make top soil or woodland loam. This is the story of the continuous process of soil building caused by the decaying vegetation. Children will never forget this story and will have a healthy respect for all stumps.

When the children are examining the root system of an uprooted red cedar tree, the simple function of the root system is explained. Roots of plants are rarely considered by most people. Those children will have a better understanding of plants and the practical knowledge of tree feeding from the experience.

Follow-up activities in the language arts were beyond our wildest expectations. A lot of reading, writing, and talking were stimulated by this experience. Children were reading materials and doing library research far above their levels. Experiences were expressed by assembly, radio, and television programs. Art played an important part. Original songs were written to illustrate the nature trail activities. Yes, even arithmetic received a new impetus. Children had to figure the cost of the trip, persons per car, and number of cars needed. A dynamic experience is truly the grass roots of all learning.

The trail is proving to be one of our best public relation activities. Transportation is furnished by the grade mothers. All of the parents have praised the trail activities and the interest has been so great the grade mothers take notes on the trail. How do the children feel about it? It may be summarized by the expression of a little girl who climbed a tree, looking around said, "Oh Lord! I have seen the world." The experience cannot be replaced in the classrooms and can be realized only outdoors.

Greensboro Public Schools is pleased with the nature trail. With the aid of the Wildlife Resource Commission, the trail area will perpetrate the animal and plant life of this area for the children of generations to come. The nature trail has proved to be one of our best teaching devices.

ATTENTION DEER HUNTERS

Many deer have been ear tagged by Wildlife Commission Biologists during trapping and transplanting operations. Should you kill one of these marked deer, please return the tag with complete information.

American Fighting Men

ARE NOT HUNTING THE *SAME GAME*
THEY WILL SHOOT WHEN THEY RETURN

The government is keeping them informed about the enemy. But it is up to us to let them know about hunting and fishing at home, and what is being done by the Wildlife Resources Commission to increase sport.

Do you have a brother, son, father, or friend in the Armed Forces who is interested in wildlife and conservation? If so, why not send him *Wildlife in North Carolina.* There is no better way to keep him informed on what is going on in outdoor North Carolina.

We will be pleased to send *Wildlife* any place in the world. In addition, we will send a special card with each gift subscription.

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My name and address is:

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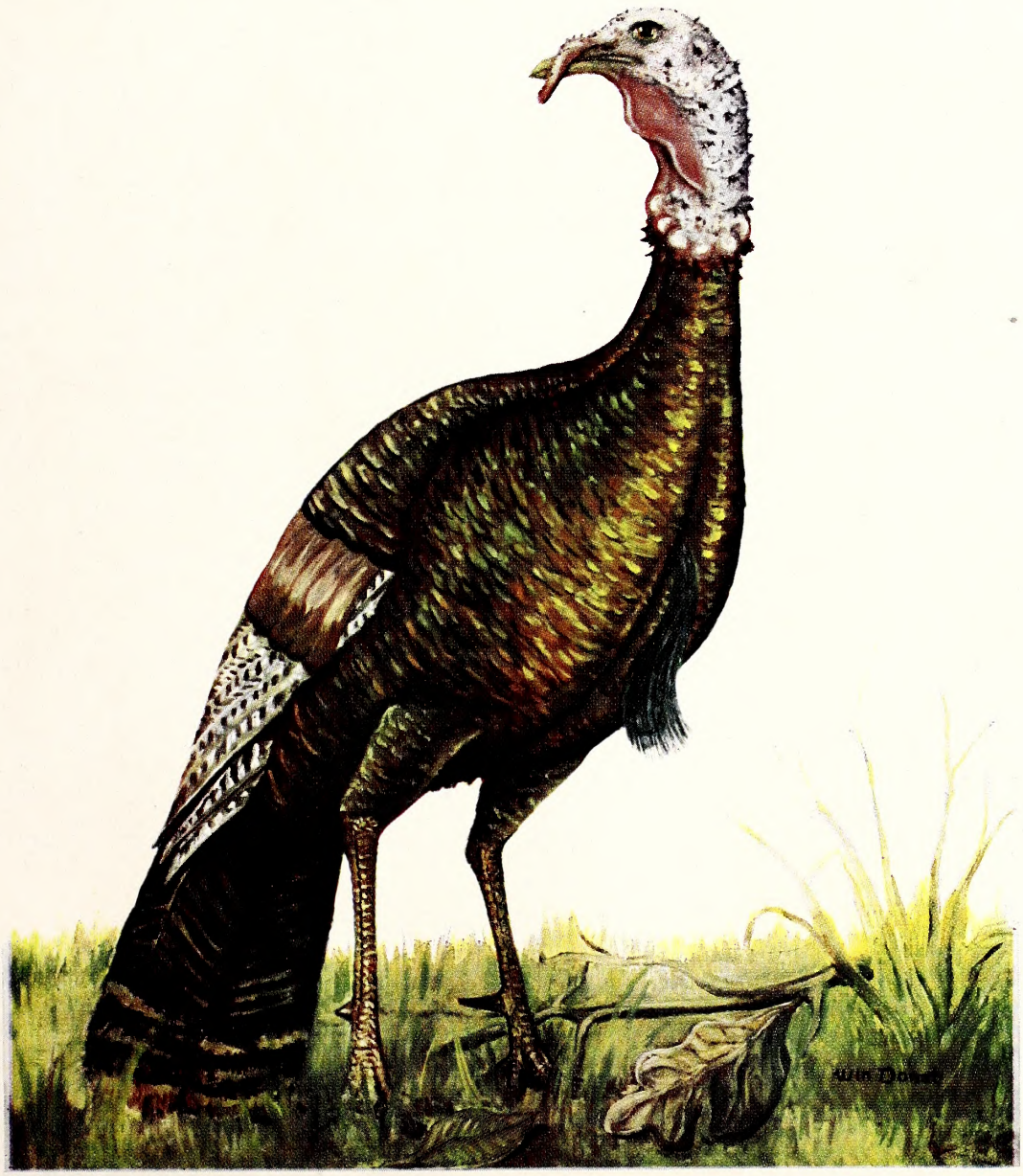
Wildlife
IN NORTH CAROLINA



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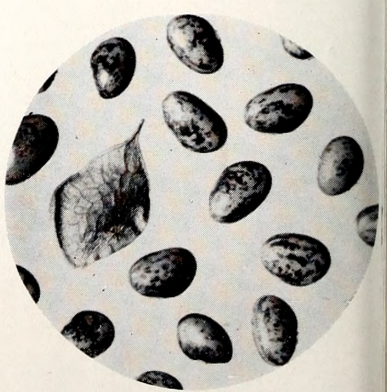

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

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COVER

The wild turkey gobbler, painted unadorned with background by Win Donat, is depicted in all his brilliant glory. King of woodland game birds, the gobbler offers a real challenge to the best of hunters.

☆ ☆ ☆

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Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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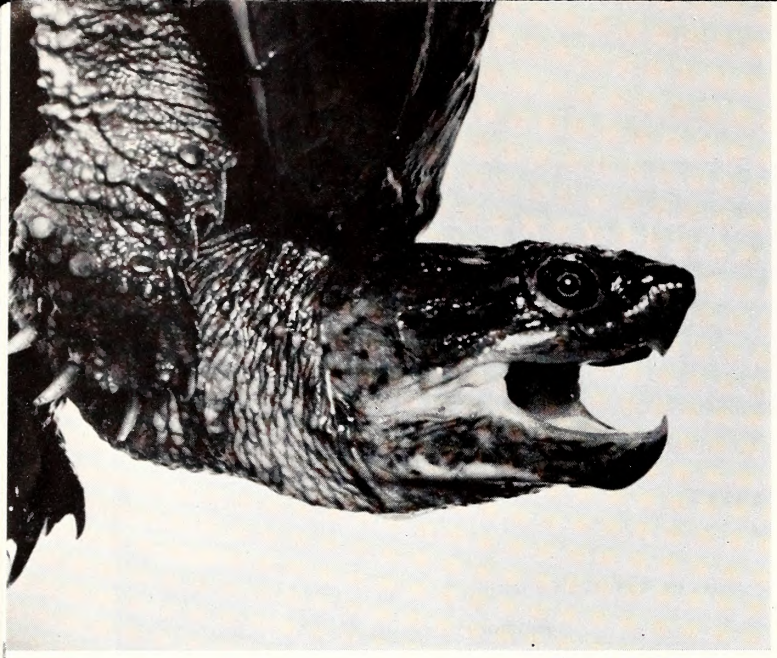
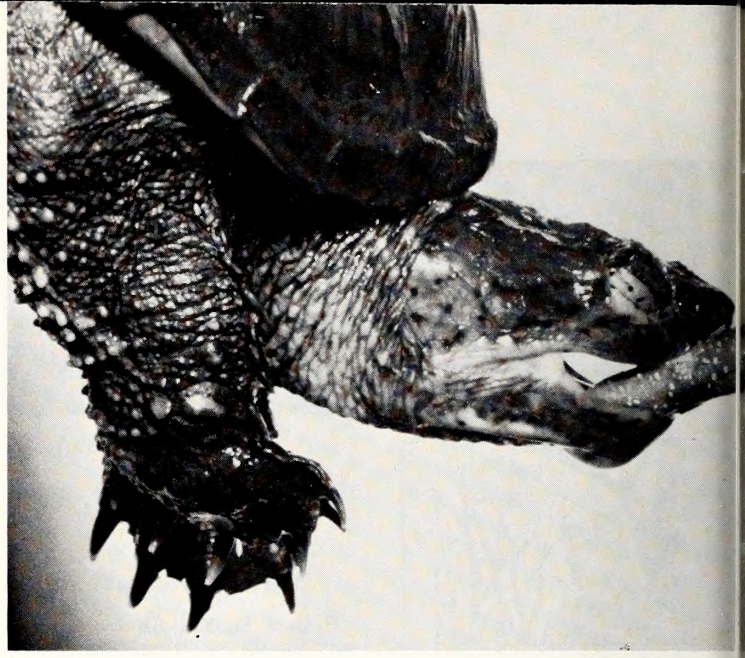




Photos by Jack Dermid

The snapping turtle is well named. It is a vicious aquatic predator, and on land its powerful, razor-sharp jaws are to be respected. Handle a snapper by its tail!

When this snapping turtle was offered a small stick, it bit rapidly and surely and, shutting its eyes, held on with all its strength. Unwary fish, frogs, or baby ducks have little chance in a snapper's grasp.

LET'S LEARN *About Our Wildlife*

The Thirty-Fourth of a Series on The Wildlife Species of North Carolina

North Carolina Turtles

by Rod Amundson

History

TURTLES HAVE EXISTED ON THE FACE OF THE EARTH in their present form for at least 175 millions of years. Mineralized remains of their shells and bones have been found in fossil beds of Northern Nebraska along with the fossil remains of three-toed horses, camels, rhinoceroses and mastadons. They probably saw the giant dinosaur appear and vanish; no doubt they will remain on the earth to the end of time unless all life on earth be destroyed by Man's inhumanity to Man.

The most famous member of the group is the one which bested a rabbit in a footrace, but throughout the folklore of every people are references to turtles. The Chinese especially revere the turtle, once considering it to be one of four animals endowed with true benevolence. Ancient Chinese cultures considered the turtle a symbol of longevity and righteousness. As to the latter attribute, it is doubtful that the manderins of old ever encountered a maddened snapping turtle.

Characteristics

A general state of confusion seems to exist in the minds of writers and students of natural history as to differentiation between turtles, tortoises, and terrapins. Considerable research into this matter of terminology has led only to further confusion. Some people consider the whole order of Chelonia to be *Turtles,* with *Terrapins* being those living generally on land, and *Tortoises* being of marine habitat. Attempts to clarify this classification anatomically only serve to turn confusion into chaos due to exceptions which pop up continually. For our purpose here we shall refer to the entire group as Turtles and let the reader continue with his preconceived definitions if he has any.

As a group, turtles are distinguished from all other reptiles by the presence of a more or less bony shell above and below the body. In some species the shell is developed to the point where the entire body can be contained within it, while others can depend on their shell only as a shield to ward off enemies.

In size, turtles range from the small, terrestial box turtle five or six inches long to the giant leatherback turtle eight feet long and weighing more than half a ton. Both extremes occur in North Carolina.

Turtles are the only vertebrate animals that have more of their skeleton outside their body than within. The "shell" of the turtle is actually an enlargement and

adaptation of the ribs by the addition of bony plates. The upper part of the shell is called the carapace, and the under shell the plastron. The advantage of this bony structure is obvious as a means of warding off enemies, but its rigid nature makes the manner of breathing somewhat unique. Where other four-footed or winged creatures breathe by the expansion of ribs and contortion of the diaphragm, turtles must breathe by moving the bones of shoulder and pelvis. Being cold-blooded creatures, turtles consume oxygen very slowly, and can go hours at a time without breathing at all!

Although much alike in general appearance and conformation, there are certain important differences among species. Some have well-developed feet with toes and claws, while the sea turtles have only flippers to propel themselves through the water. Some can move rapidly over firm ground, while others are barely able to travel on land. Some spend almost all their time in water, while others never see a body of water larger than a dewdrop. All seem to exist on the earth for the sole purpose of obtaining food, living a long time, and producing more turtles.

Longevity

Turtles have always been ascribed the attributes of Methuselah, and most species do live long lives. Being cold-blooded, slow-moving, somewhat lethargic creatures, turtles do live longer than any other creature including Man. Specimens in captivity have reached 200 years, and even the small box turtle lives to be a hundred years.

Most people believe that turtles grow very slowly, but this is not the case. An example is a sea turtle kept in captivity in California which grew from 29 pounds to 350 pounds in seven years.

The age of certain turtles can be determined to some extent by the addition of growth rings on the horny layers of the shell. Others, however, shed the layers regularly, thus preventing the formation of rings. Species living in warm climates remain fairly active the year around, and grow faster than those which spend several months each year hibernating in the bottom of a pond. Once maturity is reached, turtles grow very slowly.

Hibernation

Because they are cold-blooded creatures, turtles are extremely sensitive to the temperatures of the air and water surrounding them. Although many turtles spend considerable time basking in the sun, they cannot stand high temperatures or long exposure to sunlight. They are equally sensitive to low temperatures, and would soon die at temperatures below freezing. Whereas they can easily plop into the water or wander under a shady bush to avoid summer heat, they must entirely escape long periods of cold during the winter months. Even in North Carolina's mild climate, turtles must either bury themselves at the bottom of their pond or dig into the ground below the frost line. There they remain for indefinite periods with their body processes slowed almost to the point of death. Warm weather brings them out occasionally during winter months, and in the spring they are ready to resume the slow pace of turtle living.

Mating

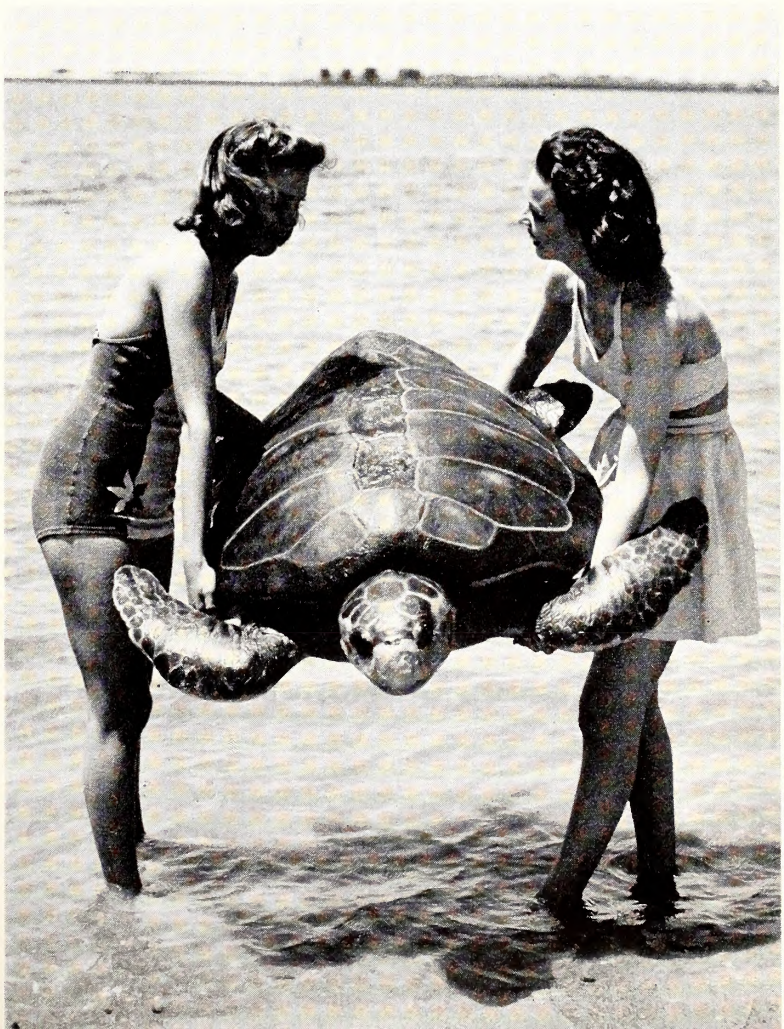
The reproductive process and association of turtles is casual almost to the point of indifference. In outward appearance there is little to distinguish sexes other than generally larger size in the female and the greater distance between the anal opening and the end of the tail in the male.

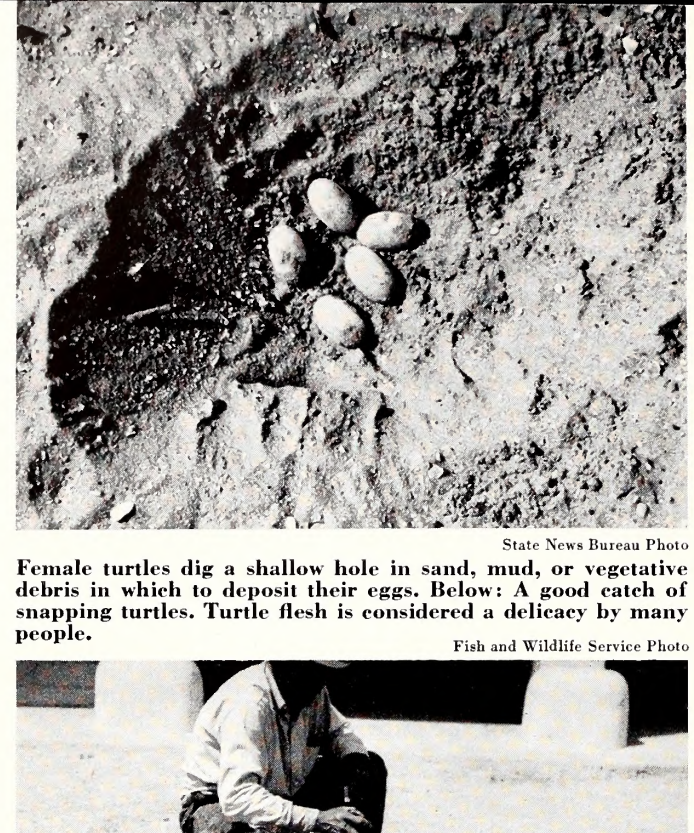
Although the Biblical quotation ". . . and the voice of the turtle was heard in the land" is generally believed to refer to the turtle dove, turtles do have voices. In courtship sea turtles utter loud, gutteral roars, beat their mates and snap at their legs, continuing the uproar meanwhile. A singular courtship occurs in the painted turtle wherein the males suddenly develop unusually long claws on their forefeet and use these to stroke the head and neck of the female.

There is no family life whatever among turtles. Mating is entirely casual, and the male is out of the family picture the moment mating is completed. Mating occurs in the spring, soon after turtles come out of hibernation. By midsummer the eggs are ready to be deposited in whatever environment the female chooses.

Terrestial species such as the box turtle commonly deposit their eggs in damp localities of rotted wood or vegetation, usually near a rotted log. More aquatic species, such as the mud turtle or snapper, crawl from the

These girls can carry a museum-mounted loggerhead with ease. They could not budge a live sea turtle of equal size, for it would weigh several hundred pounds. State News Bureau Photo

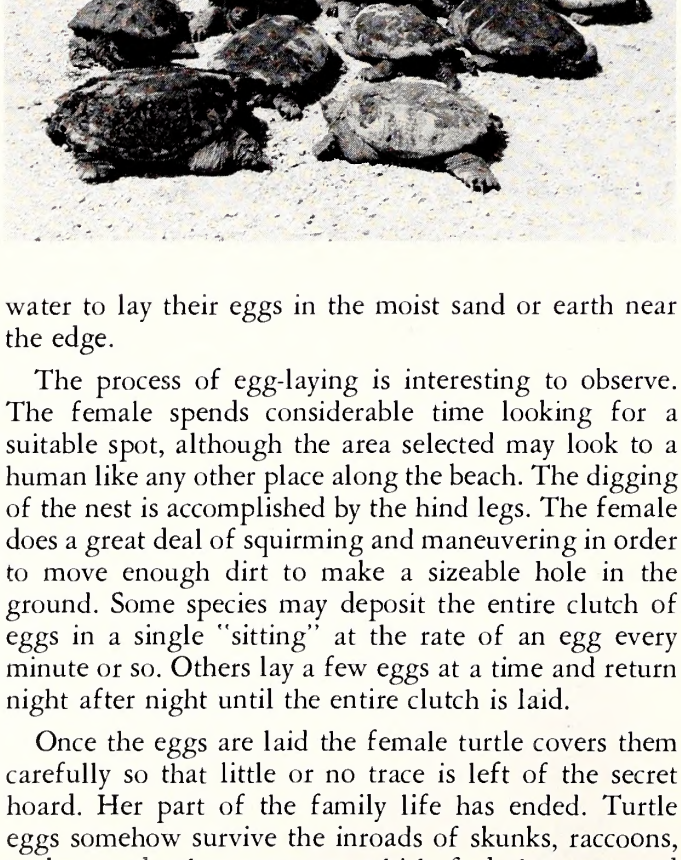




State News Bureau Photo

Female turtles dig a shallow hole in sand, mud, or vegetative debris in which to deposit their eggs. Below: A good catch of snapping turtles. Turtle flesh is considered a delicacy by many people.

Fish and Wildlife Service Photo



water to lay their eggs in the moist sand or earth near the edge.

The process of egg-laying is interesting to observe. The female spends considerable time looking for a suitable spot, although the area selected may look to a human like any other place along the beach. The digging of the nest is accomplished by the hind legs. The female does a great deal of squirming and maneuvering in order to move enough dirt to make a sizeable hole in the ground. Some species may deposit the entire clutch of eggs in a single "sitting" at the rate of an egg every minute or so. Others lay a few eggs at a time and return night after night until the entire clutch is laid.

Once the eggs are laid the female turtle covers them carefully so that little or no trace is left of the secret hoard. Her part of the family life has ended. Turtle eggs somehow survive the inroads of skunks, raccoons, snakes, and other creatures which find the nests and enjoy a feast. People along the coast consider sea turtle eggs a delicacy, a fact that might contribute to the scarcity of sea turtles along the Carolina coast.

The incubation period varies according to the temperature of the mud, sand, or debris in which the eggs are deposited. Warmer temperatures bring about a speedier hatch, and cooler weather the opposite. Once the eggs hatch, the young turtles are entirely on their own. Their shells are undeveloped and soft, and they become the prey of any creature large enough to eat them and is so inclined.

Food

The food habits of turtles are a rather complete index of the small animal life in their environment, with certain vegetative materials thrown in for salad. Most are almost entirely carnivorous, and only a few eat plant materials. The food habits of turtles will be discussed in more detail in connection with individual species.

Turtle eggs contain a large amount of yolk in proportion to the amount of white. They vary in shape from elliptical to spherical. Snapping turtle eggs are very much like ping pong balls in size, shape, and color. The shells of turtle eggs are usually tough and leathery, although some are hard and brittle. The shells are permeable to allow moisture to enter and gases to escape.

The Common Musk Turtle

This is a rather small, aquatic turtle that gets itself in trouble with fishermen through its habit of stealing bait off the hook without jiggling the bobber. It seldom exceeds five inches in length or weighs more than half a pound. The carapace is a dull olive or brown, smooth, with occasional dots or streaks. It can be identified by two yellow stripes along the head, one above and one below the eye. The musk turtle gets its name from an extremely evil-smelling musk that is exuded.

The eggs are elliptical and very hard and brittle, and are deposited along the bank of the pond or river where the species abound, usually in or near a rotted stump or a log. They may either be buried in a pouch or laid on the surface and covered over with debris.

Musk turtles feed on mollusks, insects, both adult and larvae, earthworms, minnows, crayfish, other small animal life, and occasionally green vegetation. By temperament they are pugnacious, and somewhat secretive in habit. They have no economic value whatever, and at the same time are almost completely harmless except when they annoy fishermen by stealing bait.

The Common Mud Turtle

The common mud turtle is smaller than the musk turtle, averaging about 3½ inches long and about two inches wide. These measurements include only the carapace. The shell is a dark, muddy brown or black, and the head has two rather indefinite rows of yellow spots on either side. Common mud turtles are found more frequently in small ponds and sloughs than in rivers or large lakes, and may be found in roadside canals. They are found in brackish swamps along the Carolina coast.

These turtles are excellent swimmers, and are more at home on land than musk turtles are, being able to walk along with some degree of agility. They are not especially pugnacious, will attempt to bite when annoyed.

Their food consists of fish, insects, worms, and any of the variety of small animal life to be found in small ponds and canals. The eggs are elliptical, rather small, white, with brittle shells. Nesting habits are similar to those of the musk turtle, with beds of rotting leaves or rotting wood being the favored nesting spot. About five eggs are deposited in such a locality. Mating occurs under water.

The Snapping Turtle

The common snapping turtle is one of the most widely distributed turtles, and by far the smelliest, most vicious, and downright repulsive. Their shells are relatively small compared with the rest of the body, and this fact may be a clue as to why they are so agile when out of the water.

Snappers have been known to reach more than eighty pounds in weight, but such specimens are rare. Average size would be about 15-20 pounds. The head is large in proportion to the body, and the neck is long and powerful as are the long muscular tail and the heavy legs. Snapping turtles can get up on their feet and cover ground with amazing speed. Captured specimens, if teased sufficiently, will actually try to attack a man, and will strike so viciously at a tormentor that the entire body will leave the ground.

Snapping turtles are predators. They eat numbers of fish, frogs, and even the young of other turtles. In the waterfowl breeding grounds, snappers are a serious menace to baby ducks, and have been seen to pull a full-grown mallard under the water and devour it.

The eggs of snappers are round and white, reminding one of small ping pong balls. They are deposited, dozens of them, in the mud or sand along the shore of the lake or river where the turtles abound.

Although snappers spend most of their time in the water, they often make long trips cross country from one pond or lake to another. They have been seen several miles from the nearest body of water big enough to support the species. Where most aquatic turtles crawl out of the water onto a log or a rock to sun themselves, snappers rarely do, being content to get sunshine by coming to the surface with only the heads protruding from the water.

Snapping turtles are considered edible by many people, and they have been shipped by the thousands to the New York trade. In the midwest, many farmers used to catch a good-sized snapper, and fatten it up in the swill barrel. It is hard to believe that such a wild, vicious creature would survive in a barrel of fermenting kitchen scraps, dishwater, souring milk and ground grain, but apparently the mixture is ideally suited to the snapper's tastes. A specimen in Minnesota spent three years in a barnyard swill barrel, and reached a weight of at least 70 pounds before being butchered and made into turtle stew.

Snappers hibernate in deep holes during cold weather, but may come up from time to time during warm spells. They are subjected to a number of parasites, especially leeches which fasten themselves to the leathery skin and bloat themselves with blood.

An old specimen of snapping turtle, with green algae growing on his shell, leeches fastened to his skin, his eyes glaring and his jaws agape, is an unpleasant creature, to put it mildly. Fishermen who catch them remove the head before attempting to remove the hook!

The Soft Shell Turtle

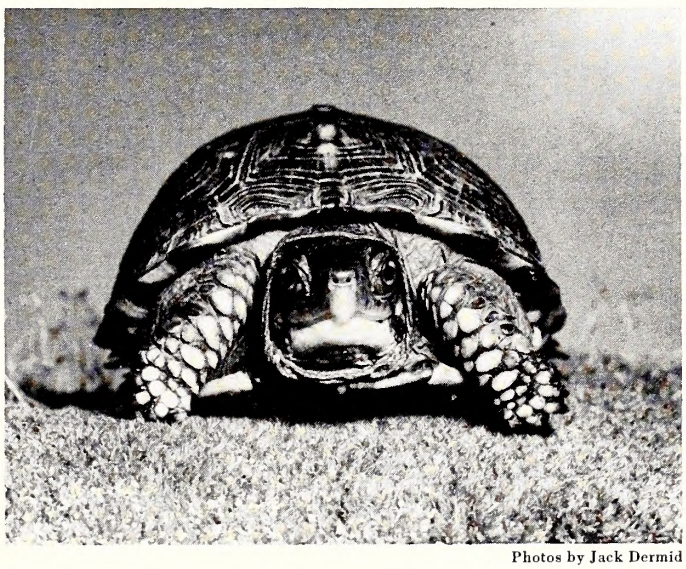
This leathery-shelled creature is almost as unsavory as the snapper. Instead of having bony shells, soft shell turtles are covered over with a rather pliable, leathery shell of a dull brownish-gray color. The neck, feet, and tail are unusually long, and the head comes to a long, pointed snout with two large, glaring nostrils.

Soft shells are excellent swimmers, and feed almost entirely on fish. These are the most aquatic of turtles, being able to take oxygen from water without the necessity for coming to the surface to breathe.

Box Turtles

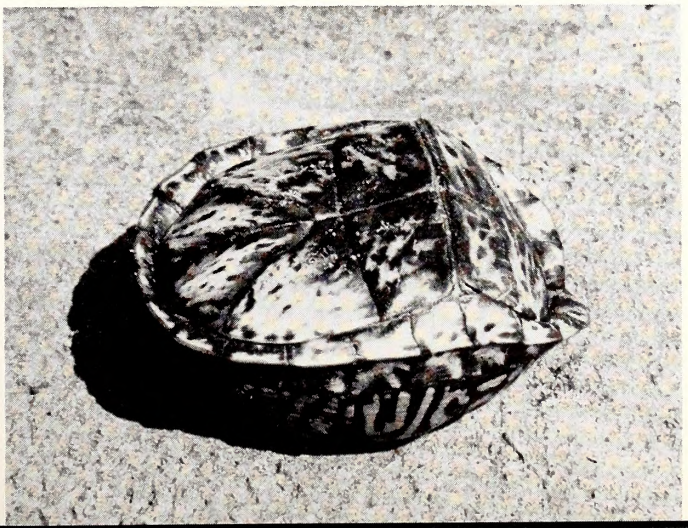
Nearly every motorist has at some time or other seen a box turtle crossing the highway. These small turtles are widely distributed throughout the state, and are perhaps the most harmless and friendly of turtles (if turtles may be said to be friendly).

●——————————See TURTLES Page 18

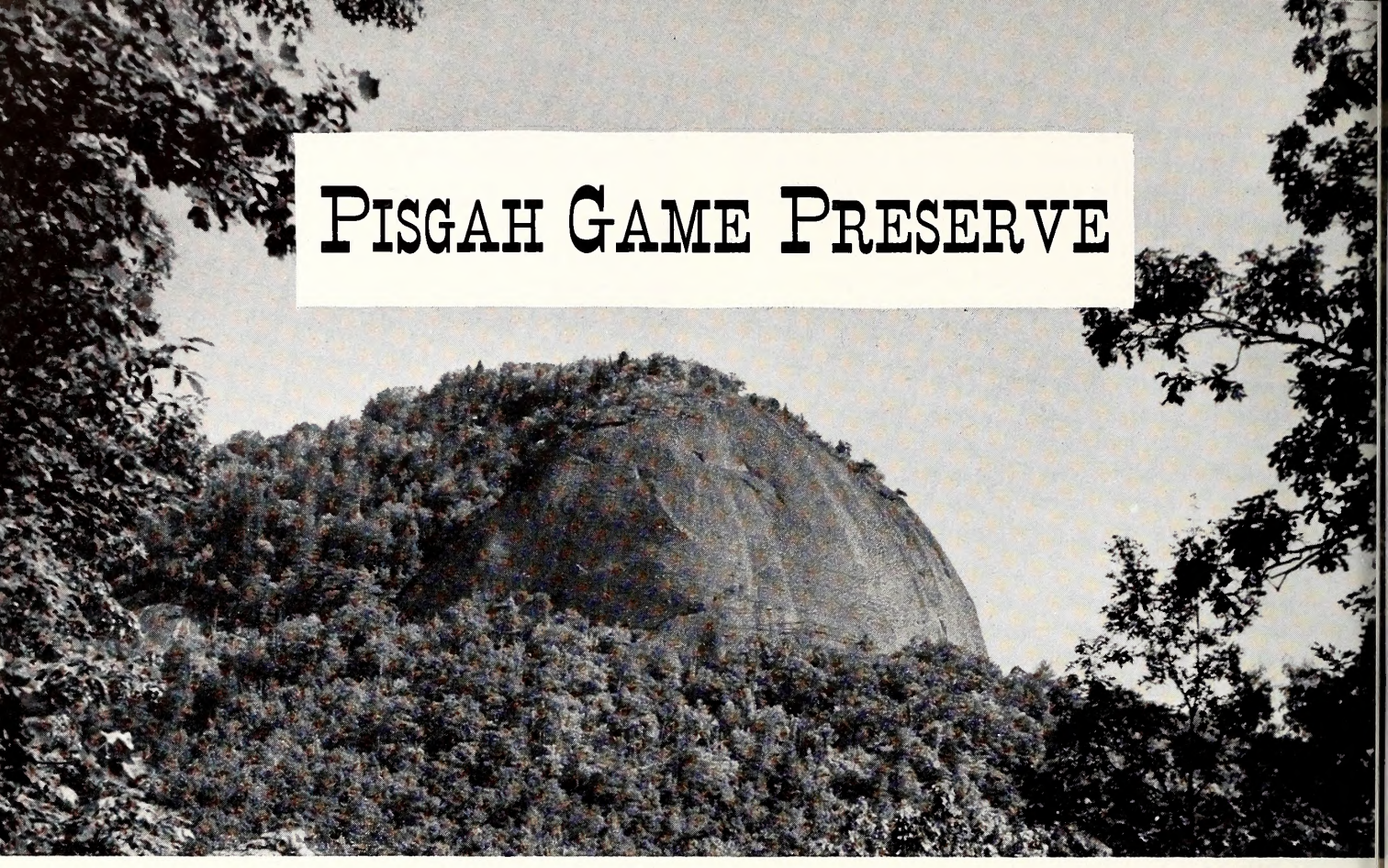


Photos by Jack Dermid

The box turtle carries its house wherever it wanders. It is a common species throughout North Carolina. Below: This upside-down box turtle shows how completely it can withdraw into its "shell" for protection from enemies.



Pisgah Game Preserve



Looking Glass Rock is a familar landmark in the Pisgah Game Preserve. The 100,000 acre preserve of mountain timberland has probably furnished more sport for more people than any other single tract of public land in the Southeast.

by Malcolm G. Edwards
Supervisor, Western Wildlife Management Areas
Photos by Jack Dermid

FOR MANY YEARS, the word "Pisgah" has meant deer hunting to thousands of sportsmen in the southeastern states. This 100,000 acre block of solid timberland has probably furnished more sport for more people than any other single tract of land in the southeast. The Pisgah Game Preserve has long been a mecca of hikers, nature lovers, and sightseers, the terrain ranging from broad flat valleys to rugged peaks towering to 5,700 feet. An excellent road system, including one Federal highway (U.S. 276) crosses the preserve, giving access to all sections. Numerous trails, public campgrounds, and picnic areas are maintained for the use of the public, furnishing relaxation and entertainment to nearly 400,000 people each year.

The greater part of the preserve is classified as northern hardwoods, consisting mostly of oak, hickory, maple, magnolia, and buckeye, with an understory of dogwood, sourwood, mountain laurel, and rhododendron. The rich coves grow tremendous stands of tulip poplar, while the higher slopes in the southwestern section are covered with red spruce and balsam fir. Covering parts of Buncombe, Henderson, Haywood, and Transylvania counties, the accessibility of the forest is one reason for its tremendous popularity.

While the area is a Federal Game Preserve, it is administered under an cooperative agreement between the U. S. Forest Service and the Wildlife Resources Commission, whereby the Forest Service furnishes all installations, such as houses, signs, checking stations, etc., and the Wildlife Commission furnishes personnel, equipment, and supplies for protection, management, and development.

The Pisgah Preserve is land that was formerly part of the old Vanderbilt Estate, which was established in the 1890's. In 1911, the present preserve was purchased from the Vanderbilts. The original timber was being cut at that time, and this cutting continued for some time after the Forest Service took over. It was stocked with deer shortly after the Vanderbilts bought it, and the deer herd did well until an epidemic hit the herd sometime around the turn of the century. However, due to the heavy timber cutting, which produced a tremendous amount of food, the herd rapidly increased and built up to where, in 1936 and 1937, it was estimated to consist of 12,000 to 15,000 animals. As this was considerably more deer than the land could support, they soon faced a serious browse shortage, and in 1932 the first annual big game hunt was held. As would be expected, the kill was tremendous on this and succeeding hunts, but the herd was still not under control, and in 1935 a doe hunt was held.

Although these hunts had some effect on the numbers, the deer had already done a large amount of damage to the understory of the forest, and the preserve was not capable of supporting nearly as many deer as it formerly had. In 1939, a very severe epidemic of hemorrhagic septicemia, often called "shipping fever," broke out, and several thousand deer perished. It was also in 1939 that the Supreme Court ruled against the State of North

Carolina, which was attempting to prevent deer being shipped out of the state, from the Pisgah Preserve by the Forest Service. The deer trapped here were used to stock most of the management areas in western North Carolina, as well as refuges in South Carolina, Georgia, Tennessee, Kentucky, Virginia, and West Virginia.

When the state took over the game preserve in 1941, the deer herd had hit an all time low. Since then, there has been a gradual increase in the size of the herd. The herd at this time is probably between 2,000 and 4,000 deer. In 1949 there was another outbreak of hemorrhagic septicemia, but it was not as serious as in the past. This disease, often called "black tongue," results in hemorrhaging in all parts of the body, particularly in the stomach, intestines, lungs, eyes, and tongue. The deer usually go blind, and death most frequently is from suffocation, caused by the yellow blood serum which collects in the lungs. Pockets of this serum can also be found throughout the muscles, and there is often bleeding from all exterior openings. Death evidently comes quickly and with a terrific struggle on the part of the deer. Causes of infection and transmittal are unknown, as is any practical method to treat wild deer. The theory has been advanced by some that ticks transmit this disease, but there is no evidence to support this in the western part of the state. The writer personally examined over twenty deer during the 1949 outbreak, five of which were still living, and found no evidence of ticks.

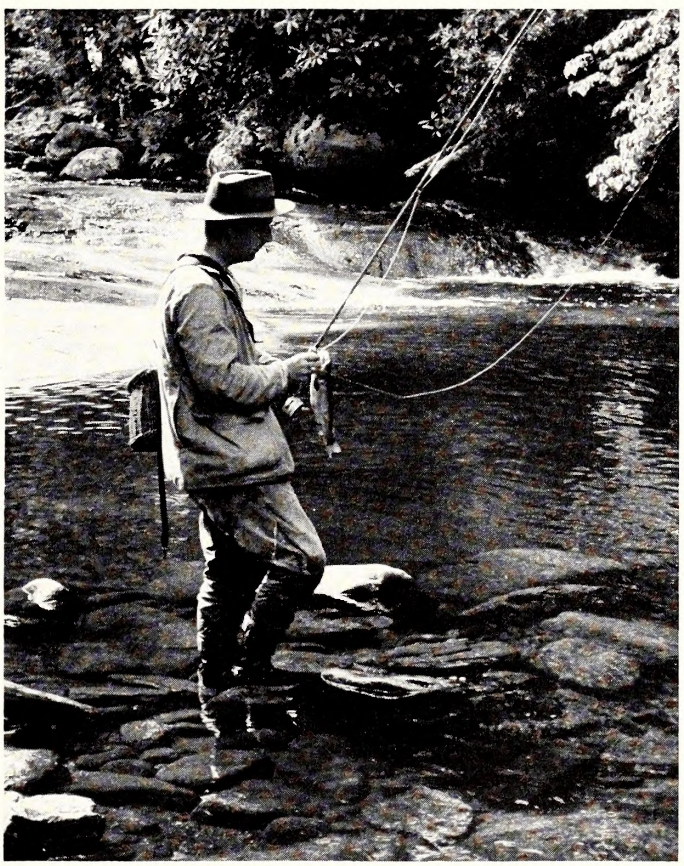
In addition to deer, a large bear population is present, and while it does vary at times, the greater part of the bear here seem static. In contrast to the smaller areas covering one watershed, the Pisgah Preserve covers five major watersheds and innumerable smaller ones, and on an area this size, the bear can nearly always find sufficient food by moving about within the area.

For unknown reasons, the wild turkey disappeared completely from the Pisgah Preserve about eight years ago. At intervals, some are seen in the Bent Creek section, which no doubt cross over from the Biltmore estate, but there are no known resident flocks.

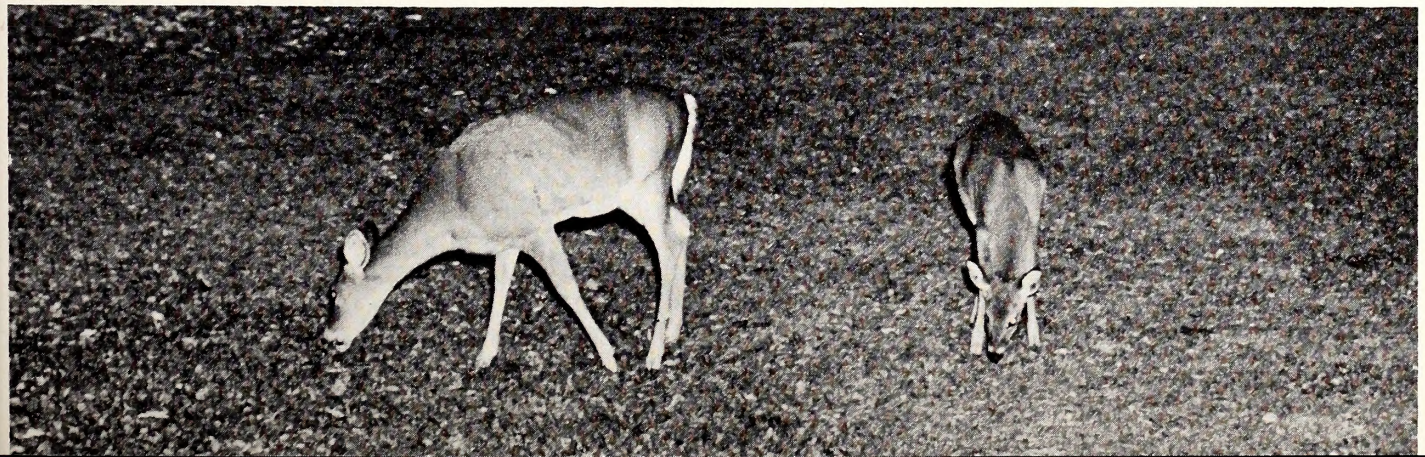
Raccoons are numerous, as are grouse in places. The squirrels vary with the mast crop, being plentiful some years and scarce others.

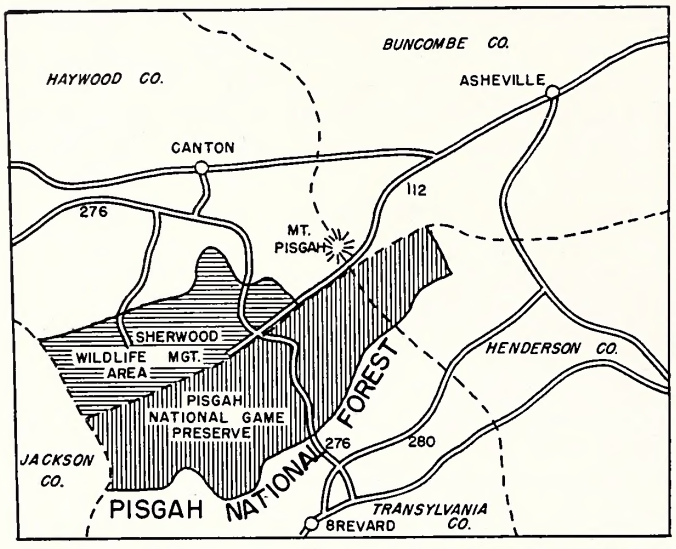
The 1951 big game hunt will be the sixteenth; there being several years during the war when it was deemed not practical to hold these hunts. The hunts are usually of two or three weeks' duration, with each permittee hunting three days. The hunting area is alternated after each hunting period, giving each new set of hunters a rested area. This is practiced on the two main hunting circles, as well as the three wilderness areas, where hunters camp out. For the last three years, the hunter success has varied from 12% to 18%. The hunters are allowed one bear or one deer and on each hunt several bear are taken. On the 1948 hunt, 1,545 hunters killed 244 deer and 8 bear; in 1949, 1,488 hunters took 139 deer and 6 bear; and in 1950, 1,076 hunters took 138 deer and 4 bear.

The hunting season on the Pisgah Preserve usually opens with two weeks of squirrel hunting during September or October. About November 20 of each year, the big game hunts begin and last into December. Following the end of the deer and bear hunt are 6 to 12 days of raccoon hunting, and the hunts end with two weeks of grouse hunting, which finish about January 1.



Unhooking a nice rainbow trout caught in the Davidson River, one of many fine streams in the Pisgah Preserve. Below: Considerable management work has been done to establish permanent pastures for deer. These deer were photographed feeding at night.





Map by Jean Outlaw

Located only a few miles southwest of Asheville, the Pisgah Game Preserve is easily reached by paved highways.

While raccoons are plentiful on the preserve, the kill varies from year to year, being affected by the weather, food conditions, etc. In 1948, 212 parties took 118 raccoons; in 1949, 81 parties caught 35; and last year, 327 parties took 137.

Most of the grouse are killed incidental to the squirrel hunt, and consequently the kill is usually low. In 1949, 884 hunters took 1,560 squirrels and 18 grouse, while on the 1950 hunts, 561 hunters bagged 514 squirrels and 35 grouse.

The major watersheds draining the Pisgah Preserve furnish excellent trout fishing. Davidson River and its main tributaries, Avery Creek, Cove Creek, and Looking Glass Creek, are fished as heavily as any streams in the state, and yet, due to heavy stocking and excellent natural reproduction, the average catch is around four fish per man. This is mostly rainbow trout, with a few brown on the lower end, and the native brooks in the headwaters. South Mills River produces excellent brown and rainbow fishing, as does North Mills River. The larger feeder streams are Cantrell Creek, Bradley Creek, and Big Creek. While smaller, the rainbows are more numerous and very scrappy in these feeder streams. The North Fork of the French Broad River produces the most highly colored fish, and tests have shown natural food more plentiful here. Bent Creek and Lake Powhatan are easily reached from Asheville, and produce good fishing. Between thirty and forty thousand trout six to fourteen inches long are stocked in Pisgah and Sherwood in a normal season.

Under Pittman-Robertson Development Project 28-D, considerable development has been accomplished. In 1949, 50 acres of rye-vetch, rye-peas, peas, and rye grass and clover were planted for the benefit of deer and other species. As some of these mixes proved unsuitable, it was decided to establish permanent pastures of ladino clover and orchard grass or fescue and some perennial rye grass. Soil samples were taken and analyzed, and a tractor and equipment assigned to the area. In the fall of 1950, the protectors planted 45 acres in permanent pasture which was fertilized and limed as recommended by the Extension Service. With the exception of several small fields, which were planted late, excellent results were obtained and use by deer was heavy all winter. It was found that very small fields are not practical where a heavy deer population exists, as several will move in, and between grazing and trampling, they often destroy the grass and clover. The deer show a definite preference for clover, and in 1951, only ladino and orchard grass or fescue, amounting to twenty acres, were planted. In addition, the established pasture was top dressed.

The numerous small clearings resulting from log landings, old home sites, etc., are kept open, letting in sunlight, which brings about a change in plant succession and creates more of the forest edge so favored by game.

One hundred and twenty salt blocks weighing fifty pounds each are placed on established salt stands each year to provide for the natural need of the deer and to act as a holding factor.

Wildcats, foxes, and skunks are trapped each January and February. In 1949, eighteen bobcats were trapped on the Pisgah Preserve.

A modified clear cutting program is being carried out on the forest, and 244 acres were treated during 1949 and 1950. Under this plan, all good species of merchantable timber are left, and poor specimens of these species and all weed trees are cut. This, of course, produces a tremendous amount of sprouts which are utilized by the deer.

Another very successful development practice is the slashing of rhododendron. While rhododendron is not a preferred deer food, it is abundant, and the deer can exist on it. However, in most places, they have browsed it beyond reach. During the critical months of January, February, and March, the rhododendron is slashed, but not completely severed, and it falls over, but is connected to the stump by a small section of wood. In this way, the leaves will stay green indefinately, and the tops are available to the deer. Likewise, the plant will sprout from the root, bringing on another supply of browse.

Honeysuckle and red haw seedlings are planted along road banks, old fields, and other places, furnishing some nutritive and highly palatable winter browse.

In summary, while it does not have the deer herd that it once had, the Pisgah Game Preserve is still furnishing sport and outdoor recreation for thousands of people. Fishing and small game hunts are very successful, and considerable development work is being done to improve both big and small game hunting.

The largest rainbow trout ever caught east of the Mississippi River was taken from Glenville Lake in North Carolina in 1949. It was a 14-pound, 1-ounce rainbow, measuring 33½ inches.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Morganton Sportsman Appointed to Wildlife Resources Commission

Governor W. Kerr Scott has appointed James A. Connelly, Morganton furniture dealer, to fill the unexpired term of the late George Keesee, Gastonia. Although Connelly is the youngest member of the Commission, he has had a life-long interest in hunting, fishing, and wildlife conservation. He has been active in Wildlife Federation affairs, and is president of the Burke County Wildlife Club.

* * * *

Wildlife Commission Meets at Asheville

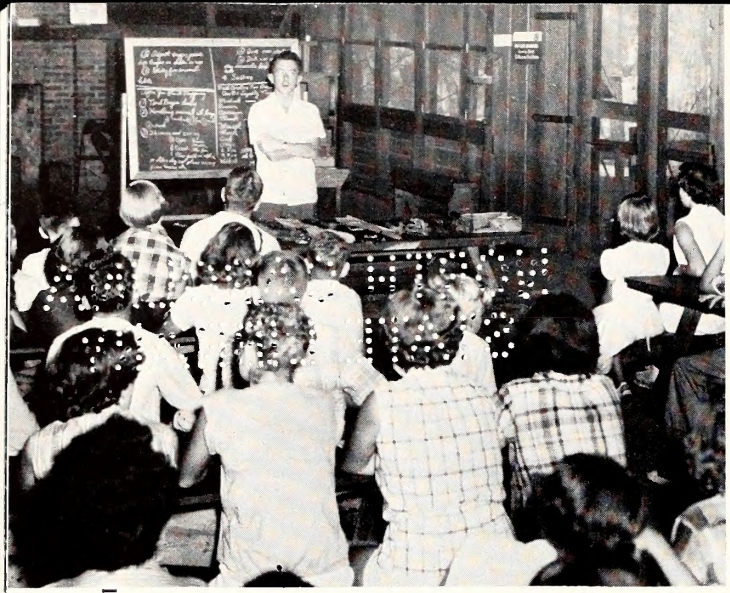
The N. C. Wildlife Resources Commission held its October meeting at Asheville in connection with the annual meeting of the N. C. Wildlife Federation. Action taken by the Commission included the establishment of two "Wildlife Days" including Wildlife Protection Day on November 22, and Wildlife Management Day on March 21; approval of the sale of rainbow trout imported from Denmark at restaurants with the provision that such trout be properly labeled as an import from Denmark and be thus listed on menus. The Commission also okayed plans for the annual deer hunt at Holly Shelter, approved production of a sound-color motion picture on warm water fishing, and authorized a pre-service training school for prospective wildlife protectors to be held early next year. Altogether there was a total of 15 items on the agenda.

* * * *

N. C. Wildlife Federation Meeting a Success

Enthusiasm and success were the keynotes of the N. C. Wildlife Federation's annual meeting at Asheville on October 8-9. The meeting convened at 3:30 p. m. October 9 to choose Miss Tonya Gamble, Durham, as Miss Wildlife of 1951. Miss Gamble was sponsored by the Durham County Wildlife Club. At the Federation's banquet, Havilah Babcock, sportsman, author, and Chairman of the English Department of South Carolina University, made an inspiring and entertaining address, pointing out that Man is the greatest enemy of wildlife, and is the only creature that kills more than is needed—to show off, but is slowly changing from the greatest destroyer of wildlife to its chief restorer through the institution of wildlife management programs. At the banquet awards were presented to Miss Wildlife and to Bobby Cooper, Elizabeth City, winner of the Federation's wildlife essay contest.

The following officers were elected at the Federation's business meeting October 9: President, the Rev. Wayne Williams, Asheville; Executive Vice-President, Dr. Herbert Fox, Durham; Vice-Presidents, W. B. Robertson, Rutherfordton, and Major J. L. Murphy, Kill Devil Hills; Secretary, Mark Taylor, High Point, and Treasurer, Harris Lawson, Durham.



A full schedule of wildlife instruction was provided for 4-H club members by personnel of the Wildlife Resources Commission.

The youngsters showed great interest in a class dealing with fur bearers and trapping. Here they inspect a raccoon pelt.

A bait casting class. Instruction in the proper use of sporting equipment will prove valuable to these future sportsmen.

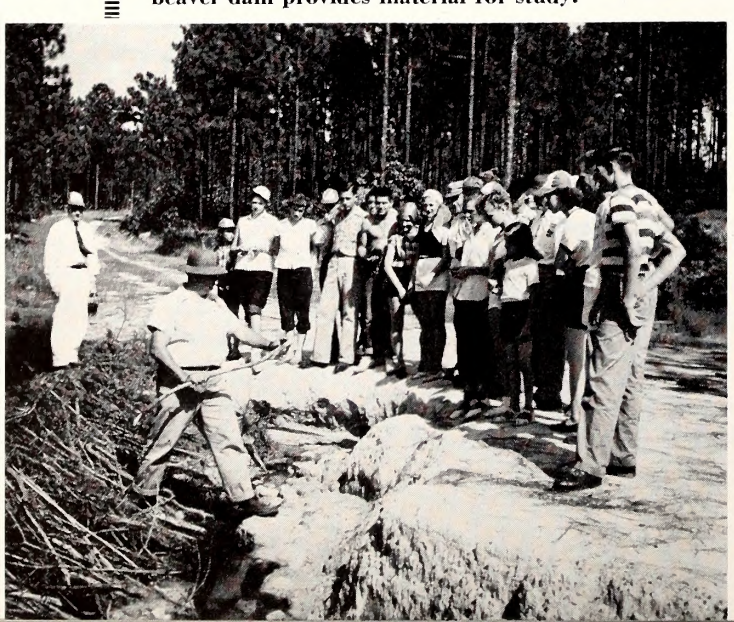
4-H Wil

Camp Millstone Rock in the Sandhills W activities in late August. The annual 4-H and girls participating. Representatives of t of wildlife topics with the eager youngste ment, furs and trapping, bird house const bait and fly casting, and a guided tour of t

Highlight of the conference was an plans were made for better wildlife projec many sound ideas were presented. The gro and cats; planting of bicolor field borders,

The Wildlife Resources Commission wise investment in the future. Two emplo to school, scout, and 4-H groups, and oth ence. The 4-H Wildlife Conference was sp Cartridge Company. Several conferees wer

One highlight of the program was a guided tour of the Sandhills Wildlife Management Area. Below: A beaver dam provides material for study.



A lake was visited in which ducks and Canada geese are kept t lure migrating birds. Plans are to establish a resting place an wintering area for waterfowl.

t takes years of experience to learn the secrets of trapping, but hese boys are being given a sound foundation in a demonstration.

Handicraft classes included the construction of bird houses for common species. Both boys and girls participated.

Conference

ement Area was the scene of many outdoor rence was in session with nearly 100 boys ources Commission discussed a wide variety bjects included game laws and law enforce- d management, game management, reptiles, fuge.

ong attending 4-H club members in which out on the farm. Enthusiasm was keen, and grams to encourage control of stray dogs n of squirrel boxes as some of their projects.

nservation education among youngsters is a ucation Division devote most of their time he Commission's staff frequently give assist- e State 4-H Organization and the Federal he North Carolina Wildlife Federation.

Time out for a swim. Between morning and afternoon classes time was allotted for healthful outdoor recreation.

Boys and girls learn first hand why it is best to leave young wild animals in the woods. Besides being illegal, the taking of fawns creates a feeding problem.

Appetites are whetted by a busy day of classes and outdoor activities. The youngsters showed enthusiasm for the wildlife program.

FIRST AID FOR SPORTING DOGS

A TOM FARLEY FEATURE

Walker hounds. When dogs are released in the woods to hunt, they are subject to many mishaps. Immediate first aid may prevent permanent injury or even death.

MANY A FINE SPORTING DOG has suffered permanent damage in the field from what his owner considered only a minor mishap. Others have died because their owners didn't know how to administer the first aid treatment that would sustain them until a veterinarian could be reached.

Some of the fairly common mishaps dogs suffer while hunting are cuts, gunshot wounds, broken nails, eye injuries, food poisoning, and snake bite. The following remedies can do a lot to relieve the dog's suffering or prevent complications until a veterinarian can take over.

Cuts. Dogs seldom bleed to death from encounters with barbed wire fences, glass, or sharp pieces of metal. They are equipped to cleanse minor wounds by licking them and first aid in such a case may mean NOT bandaging the wound, but letting the dog get at it. Some cuts, of course, are located where the dog can't lick them. In these cases wash the cut with an antiseptic (hydrogen peroxide is good), coat it with vaseline or zinc ointment, and apply a sterile bandage.

Gunshot wounds. If the wound is deep, the best first aid treatment is to keep the dog in a quiet spot while a veterinarian is summoned. Hemorrhaging may be controlled by means of a tourniquet or other pressure between the wound and the heart. If a limb is broken, make a splint from a piece of board or a stick, pad the limb, and tape the splint in place. Carry the dog home, and restrict him from moving the leg as much as possible. A veterinarian should, of course, set the break as soon as he can be reached.

Broken nails. Clip the broken part of the nail immediately. Surface bleeding can be stopped by applying hydrogen peroxide. A piece of cotton secured by a bandage or adhesive tape makes an effective dressing which may be removed in from 12 to 24 hours. The bandage need not be replaced unless bleeding starts again.

Eye injuries. Hunting dogs are particularly susceptible to eye accidents. Wash the eye as quickly as possible and remove any foreign substance that shows on the eyelid. If the surface of the eye is scratched or pitted, it should be covered immediately. A light bandage soaked in castor oil or mineral oil makes a good dressing. The oil forms a clear film which will help protect the eye until a veterinarian can be reached.

Food poisoning. Hunting dogs, like all other breeds, are apt to eat the foulest refuse they can find outdoors. Frequently this results in food poisoning which induces vomiting, cramps, diarrhea, and even convulsions. A good first aid treatment is to feed the dog a teaspoonful or two of salt, then administer a teaspoonful or tablespoonful of castor oil—the amount depending on the size of the dog. This will help clean him out immediately. Don't feed him for 24 hours, then return him gradually to a full diet of nourishing, easily digested food—any one of the top grades of canned dog food is excellent. In particular, don't permit him to eat anything rough or coarse while his stomach walls are still irritated.

Bites by poisonous snakes. Here first aid is vital, if a veterinarian or physician isn't available within a fairly short time. Get to a drug store and have a potassium-permanganate solution made up. Make a deep X-shaped incision over the fang marks, drop the solution in it, and hold it there for a moment. Apply a tourniquet above the wound, if it's on a limb or foot, to prevent the swelling and the poison from reaching the dog's body.

It must be emphasized once again that first aid is a *temporary* measure. Nothing works as well as the care a trained veterinarian can give a dog, and as soon as you are out of the woods have him check the dog and possibly recommend further treatment.

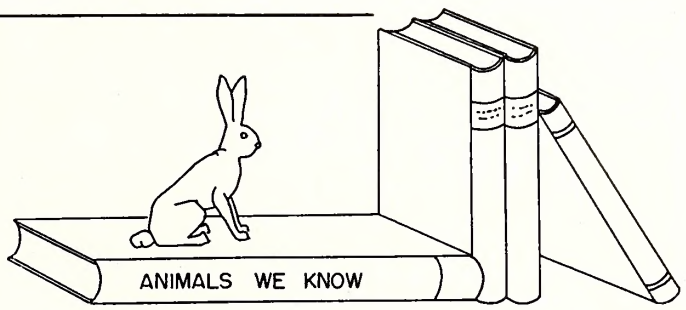
Attention Waterfowl Hunters!

Please mail leg bands with complete kill information to U. S. Fish and Wildlife Service, Bird Banding Office, Laurel, Maryland.

Animal Books

INSPIRE CHILDREN TO READ

by Lunette Barber
Wildlife Education Representative



ANYONE INTERESTED IN CONSERVATION EDUCATION should meet Mr. R. C. White, superintendent of Randolph county schools, because he is interested, well informed, and has a good knowledge of how it should be done. Besides knowing the importance of conserving our natural resources, he is eager for the children in his county to be taught how to practice conservation. Realizing the interest and eagerness Mr. White has for conservation education, the principals and teachers have gladly attempted to promote the program, and a good bit of work has been undertaken in the schools of the county.

A project that showed good results was done by Mrs. Annie L. Elkins, at Gray's Chapel School, in grade four. The chief aim was to build up a more satisfactory outcome from reading. After all if a child cannot read, he is handicapped in all school work. Through the initiative and guidance of the teacher an unusual interest in animals was used to foster more desirable reading. Other aims were to teach rudimentary concepts about animal life, to teach habits of kindness and humane treatment of animals, to build up an appreciation of nature, to learn the interrelationship of our natural resources, and to realize the importance of animals to man.

How was this to be done? The teacher decided it could be done through reading, reading, and more reading. Reading what? She and the pupils decided to read about animals. The children made a list of animals desired for study, and then were divided into groups. A workshop was set up in the room. They gathered many free and inexpensive materials. Each searched for suitable material. Then came the reading. Plenty of easy, (too many times material is furnished for reading that is too difficult) attractive, and interesting material was provided at the child's reading level. The material included books, pamphlets, magazines, bulletins, encyclopedias, and newspaper clippings. Current event programs were given. Audio-visual aids were used. Films were shown and studied. Recordings of songs and stories gave variety for interest. Much effort was put forth to offer a reading program of interest to the gifted readers while supervised work was done with the average and below average readers.

In late October as part of the Reading Improvement Program in the county, the pupils were given a reading test. After the results were known, each pupil was encouraged to strive to better his own score and improve the class average in the tests six months later.

The reading interest about animals was carried over into the other subjects. In language, self-reliance developed, contests were held, debates given, stories and poems were written, songs were sung and programs were given. Probably the greatest gain was new words and a desire for spelling them. Much knowledge was gained of history and geography in studying the habitat of the animals. In arts and crafts the results were endless—100 animals were made from plywood, 37 scrapbooks assembled, 15 animals were cut and stuffed, 15 animals molded from clay, and those drawn and cut out were too numerous to mention.

Last but not least—the reading test came six months later, using a different form of the same test. Much improvement was shown. The test indicated that some of the pupils had made a month's progress in reading every two weeks. As for example, one boy increased sixteen months in six months of school time.

Could there be a better way to improve reading than to provide material for children about nature, and especially the mammals around us? Those of North Carolina that are hunted and trapped—the bear, deer, Russian boar, raccoon, opossum, rabbit, squirrel, fox, woodchuck, mink, muskrat, otter and beaver (beaver are fully protected)—would make good reading for a whole school year, besides others such as weasel, skunk, and bobcat. Material about these animals can be obtained very easily from school libraries, county libraries (bookmobile service), encyclopedias, magazines, and other publications. So why not teach conservation along with other subjects since it is the most important problem concerning the future of mankind.

If your boy has longingly asked you "When May I Have a Gun?", have you been puzzled for the proper answer?

The Sporting Arms and Ammunition Manufacturers' Institute of New York City, has issued a helpful booklet for parents confronted with this dilemma.

Entitled WHAT EVERY PARENT SHOULD KNOW WHEN A BOY OR GIRL WANTS A GUN, this pamphlet was prepared to assist parents in arriving at their own conclusions as to when junior can be regarded as qualified for the safe handling and use of a 22.

This excellent publication can be obtained without charge by writing to Sporting Arms and Ammunition Manufacturers' Institute, 343 Lexington Avenue, New York 16, N. Y.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

What are you going to do with the Dingell-Johnson money?

Yours truly,

Joe Doaks

Dear Joe,

The money which North Carolina receives under the terms of the Dingell-Johnson Act will be used in getting the right answers to some questions—questions which must be answered so the Commission can carry on its program of trying to provide more and better fishing for more people. They have to be the right answers because they will be used by the Commission in preparing the regulations which govern fishing in the inland waters.

The fishermen of the State give the Commission lots of opinions free. They are usually given sincerely and with the best intentions in the world, but they are not always the true facts. Remember when you used to top your corn, Joe? After the plants began to develop you cut the stalks back to just above the ears so that all the "strength" would go into the ears and not into the top of the plant. It was a very general opinion that this produced the best crop. After the scientific investigators found that the top of the plant was necessary to produce the best yield, and the Agriculture Extension Service boys came around and told you the true facts, you threw your opinion away and got better yields by following their advice. The Wildlife Resources Commission needs facts on which to base its regulations.

One of the most important questions on which facts are needed is "What can the Commission do to improve the crop of game fish in the big waters of the State?" This applies particularly to the sounds and the big rivers of the coastal plain, where the water areas are so vast that it is very difficult to determine the facts which have been causing a decrease in the harvestable crop of game fish.

Various opinions are held on this subject. It may be that the decrease is the result of increased siltation of the waters produced by more intensive farming on the watershed. It may be that pollution from industrial plants and from growing cities has made the water unfit for the survival of game fish. It may be that years of selective harvest have upset the balance of nature between the fish populations—that the continuous removal of game fish has permitted the rough fish to multiply in such numbers that the game fish can no longer compete successfully for food and spawning sites. Or it may be a combination of these factors—or one we have not thought of. Anyway, the facts are needed.

The Wildlife Resources Commission is barred by State law from having anything to do with problems of pollution, whether that pollution be in the form of silt, industrial effluents, or organic wastes from cities. Consequently, the studies that are being started are designed to determine the effect of the various species on each other. We know that stocking more game fish is not the answer. It has been done for years, and the fishing has not improved.

Perhaps the carp and the catfish are preventing the bass from spawning successfully. Perhaps the gar and the grindle are eating all the food which the bass need, or are eating so many of the little bass that few remain to grow up. But bass eat fish, too. If all the rough fish are removed, what will the bass eat? Perhaps the habitat is changed so that bass cannot live there in large numbers regardless of the other species present. You don't find quail in a bare tobacco field, nor bass in a muddy or polluted stream.

To answer these questions, test areas have been set up on Little River, Trent River, and the North East Cape Fear River, representing conditions in the north, central, and southern coastal plain. Present populations will be studied, and then all possible rough fish will be removed. The effect of this removal will be determined on the food supply and the growth rate of the game fish, and a subsequent population study will show the effect of the removal on the total game fish population.

If it appears to be beneficial, further studies will be made to determine methods of removal which are least harmful to the game fish populations, and methods of preparation and markets for the rough fish to encourage their economical utilization. The facts determined by these studies will be used by the Commission in setting

up regulations for these waters, and for others where the problems appear to be similar.

Another project being carried out under the Dingell-Johnson program is one of improving the fishing in farm ponds. You know, Joe, that most of the game killed in North Carolina is "farm game"—squirrels and quail and rabbits, which live on the farmers' lands and which may be increased or decreased depending on the management procedures followed. Particularly in the Piedmont section of the State, this is also true of the fishing. Many of the big reservoirs do not provide particularly good fishing for various reasons, but the farm ponds are keeping an increasing number of fishermen happy. The Commission has long carried on a farm project to help the farmers produce a bigger game crop, and now that basic philosophy has carried over into the fisheries field in the form of a farm pond project.

It is a double-barreled project, Joe. One part is to give the pond owners the best information we have as management problems arise, and the other part is to carry out the necessary investigations and research to find the answers to those questions for which the answers are not known. In spite of all that has been written on the subject, there is much to be learned about farm ponds; and unfortunately, the management principles determined in other states do not always work in North Carolina waters. This is a big project and a difficult problem.

The Soil Conservation Service and the Agriculture Extension Service supervise or assist in the building of over ninety-five percent of North Carolina's farm ponds. The offices of these agencies cover the State pretty thoroughly and keep informed on the pond problems in their districts. With the cooperation of these organizations, the pond problems in each district will be reported to the local office, and a fisheries investigator of the Wildlife Resources Commission will make routine and scheduled visits to the districts to offer his advice on suggested management procedures for the problem ponds.

Some of the problems encountered will be easily solved by applying recognized and proved remedies. There will be others, however, where extensive research will be required to determine the answer. In some parts of the State, where the accepted stocking ratio of one hundred bass and one thousand bluegills per acre consistently fails to give good results, experimental ponds must be set up with different ratios or with fish less prolific than the bluegill. All too often die-offs follow fertilization, and the cause must be determined. Experimental work is needed in the control of excessive vegetation, fertilizer composition and application, and the prevention of sudden oxygen deficiencies. A water laboratory must be set up to determine the cause of die-offs which are unexplainable at present.

These are the two projects which are under way, Joe. Others will follow as more money becomes available, but right now it appears that these will do the most good in improving fishing for the most people. There will be no overnight miracles, but the Commission has employed competent biologists to carry out these projects and we expect that their work will show us the way to the goal of "less time between bites."

Best wishes,

Harry Cornell

P.S. A little booklet entitled "Billy Bass" has just come off the press. It is written by Dr. R. W. Eschmeyer of the Sport Fishing Institute and is published by Fisherman Press, Inc., Oxford, Ohio. It is strictly a kid's book and is written so that the youngest reader can understand. It puts the life history of the Black Bass into simple words and sentences, and teaches the basic conservation and management principles which must be followed by all of us if we are to continue to have good bass fishing. It is just right for your boy, now that you are taking him fishing with you, so that he can get sound conservation ideas right from the beginning. After he reads it, it would be a fine thing to put it in the school library so that Johnny's friends can read it too, and teach their fathers some facts of fish conservation which they do not seem to know today.

JHC

One reason why deer are able to increase in numbers so rapidly that the herds outgrow the ability of the range to support them is indicated in an item from the Missouri Conservation Commission, the Wildlife Management Institute reports. An autopsy on a nine-month-old fawn, killed by an automobile, showed that it was carrying a 100-day-old embryo. This means that the deer had bred successfully when little more than five months of age. Granted a little luck, she could have become a grandmother at the ripe old age of two.

Sportsmen and conservationists throughout North Carolina have been saddened by the untimely death of Mr. George W. Keesee, of Gastonia. Mr. Keesee was one of the original members of the N. C. Wildlife Resources Commission and still had two years to serve in that capacity at the time of his death. He was Chairman of the Commission in 1950.

Mr. Keesee was an ardent sportsman and conservationist. He devoted a great deal of time and personal expense to developing a sound wildlife program in North Carolina. He was a man who made his influence felt by all who associated with him. He was a good friend, a good neighbor, and above all, a true sportsman.

—Ed.

THE PAYOFF

by Bill Hamnett
Wildlife Education Representative

THE MATERIAL FOR THIS ARTICLE is not a result of Backyard Conservation assignments previously suggested in your magazine, but it shows how interesting our association with the world of Nature can really be.

The children who attended the annual 4-H Wildlife Conference Camp at Camp Millstone spent one afternoon on a nature treasure hunt. Each of three groups, twenty-five children to a group, were given a list of seventy-five items to find and bring into a central location for display so all might see and learn new plants and animals. Many of the items were not familiar to all, but were known to most of the entire groups. Yet in quest of the treasure hunt more than 140 different items were brought in.

It is the oddities of nature found that made the hunt a pleasure and a treat. Trumpets and pitcher plants, both containing trapped insects, were found and closely observed by the groups. In one of the trumpets the remains of 27 insects were counted.

One of the young campers brought in a branch from a sweet gum tree and upon closer observation it was found that a praying mantis was also on the branch among the leaves. This curious and grotesque looking insect is one of our most beneficial insects because it feeds principally on harmful species. Several black widow spiders were brought in for observation. It was interesting to note that in addition to the tell-tale orange hour glass mark on the abdomen two of the specimens had hour glass markings on the back or top side of the abdomen. Several of the campers brought in freshly cut chips from trees that beaver had felled.

By far the most interesting find was by a group of boys and girls while out searching for their several assignments. While walking through wire grass they saw a small cottontail rabbit hop away from them. Looking closer they saw another baby rabbit caught in the coils of a black chicken snake. Time was taken to see how the snake was attempting to squeeze the rabbit to death, but after a moment or so both the rabbit and snake were captured and brought back to the camp for display.

Perhaps many of us are missing a splendid opportunity to become more familiar with the out-of-doors by not getting out to leisurely walk about and look for the wonders of Nature we have continually passed by.

Nature, like charity, begins at home. From there, you can expand your horizons in all directions.

TURTLES

from page 7

The carapace of the box turtle is dome-shaped, and the plastron is so hinged front and back that the entire animal may be contained in a snug suit of armor.

Box turtles are attractive and symmetrical in appearance. The head, feet, and tail are well proportioned. The dome-like shell is marked with an amazingly varied pattern of yellowish markings over a dark background. The eyes are large and prominent, and in old male specimens the iris is a ruby red in color. The eyes of females are an amber or greenish color, and in both sexes the eyes have a light of something above reptilian stupidity.

Box turtles are almost exclusively terrestial. They can swim when accident forces them to, but almost never take to water voluntarily, except during periods of dry weather when they may go into shallow marshes or ponds to keep moist and cool.

These small turtles are essentially woodland species, and are quite numerous in localities where they are found. In Nash county six specimens were found within an area of a hundred square yards.

In the winter time box turtles make some effort to get under ground, but may simply bury themselves in a deep mat of pine straw and other leaves. A specimen was found near Raleigh during the month of January almost completely dormant, and only two inches under the surface of the forest floor. He would have remained unmolested until spring had not a brush fire exposed his hiding place. Although the fire blackened the carapace slightly, the turtle was undamaged and within a few hours had buried himself again in the leaves.

Box turtles lay an average of four eggs in moist forest debris, and spend considerable time getting a satisfactory nest excavated. Egg laying usually occurs on warm, damp summer evenings.

Box turtles live almost entirely on insects, but are known to eat small lizards. They eat mushrooms, slugs, fruits, berries, and worms. It is hard to imagine how such a sluggish creature could capture a lively lizard unless it were done by stealth. In addition to being almost completely harmless, box turtles make excellent pets.

* * * *

The above brief discussions are far from adequate to these most interesting creatures. There remain several species to be discussed, and more information to be given on the species discussed here. A future article will deal with these matters. (Ed.)

Protective Coloration

A *Nature Short* by Jack Dermid

THE KILLDEER STRUGGLED FRANTICALLY and noisily before me on the old gravel roadbed. It feigned injury with such perfection that the uninitiated in bird lore would have concluded it would never fly again. It was playing the broken-wing ruse to lure me away from its young in the same manner it would have tempted a marauding dog or cat. Had I approached near, the killdeer would have flown safely on its way; but I was more interested in photographing its family.

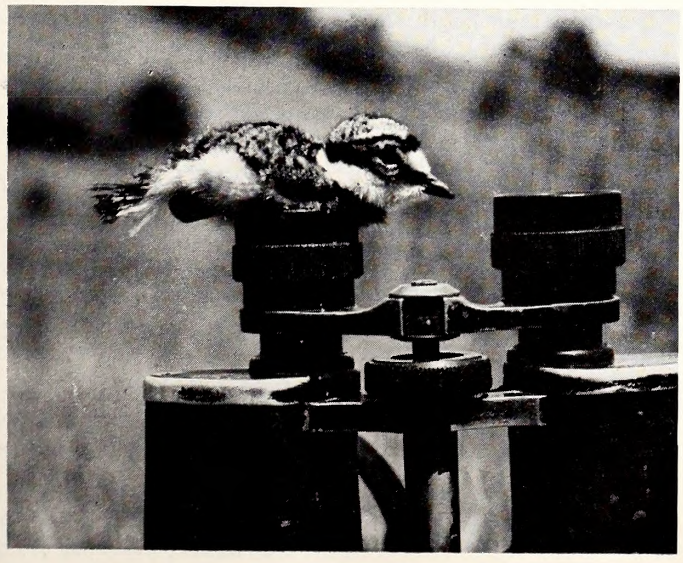
The downy young were so well camouflaged that it was no easy task to locate them. In fact, I only found one bird after many minutes of intensive searching. It was crouched motionless in the sparse grass and gravel two yards from where I began my search, yet I overlooked it repeatedly. The accompanying photograph, taken three feet away, shows how well the baby killdeer blended with its background. It is a good example of the effectiveness of protective coloration. From any distance away, the ball of pinkish-buff, black, and white down was recognizable as a bird only when it moved.

Although the adult killdeer is a very conspicuous bird in flight, it is sometimes difficult to detect on the ground. Its dark upperparts and light underparts provide a type of protective coloration known as countershading. Being darkest on the back where the light is most intense, the killdeer appears as one shade of color to the distant observer. Even the shadow under it is not dense because of the light reflected from its white belly. The two heavy black bars across the bird's breast further camouflage it by breaking up its outline.

There are many examples of protective coloration in the realm of nature. Again, the killdeer's eggs, buff-colored and heavily marked with brown and sepia, are hard to see cradled in an earthen nest. It requires keen eyes for the hunter to spot a sitting ruffed grouse in its woodland habitat of sunlight and shadow. The grouse matches its background in perspective as well as in pattern, the markings on its head being smaller to blend with the distance and those on its body larger to blend with close surroundings. The bobwhite quail is so effectively patterned that a moving bird will literally disappear before an observer when it freezes. Camouflage is not restricted to birds. Iridescent beetles can hide easily amid sun-flecked foliage, and the translucent nature of young fish makes them nearly invisible against the light. A complete list of examples would be long, indeed!

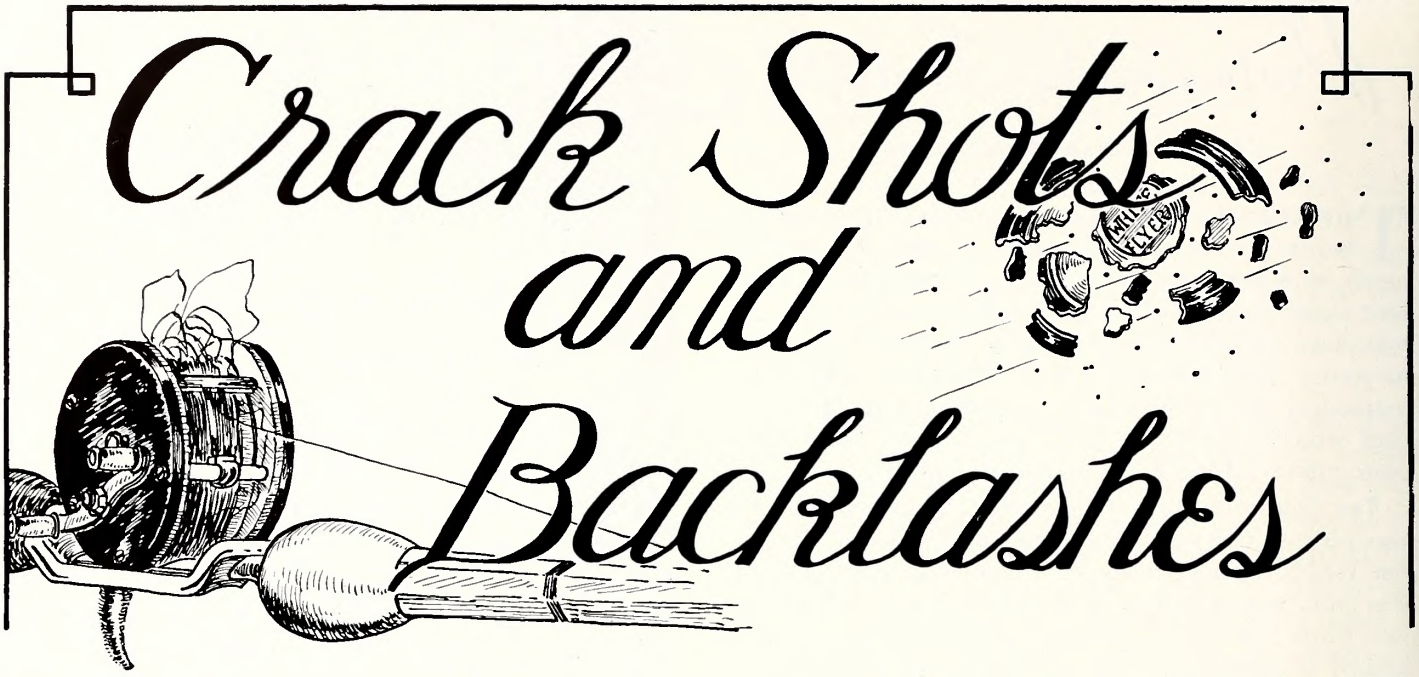
A motionless killdeer chick is a good example of the effectiveness of protective coloration.

A young killdeer is easily seen when removed from its natural background.



There is considerable disagreement among scientists over the causes and worth of protective coloration. Some believe that it is an adaptation of certain species resulting from natural selection or the survival and propagation of those individuals protectively marked over a long period of time. Others hold that the color of animals is the result of environmental influences, such as food, humidity, etc. They argue that animals are taken by predators according to their relative numbers, and consequently protective coloration is almost useless for evading enemies. Many variables enter the picture, however, for white egrets, black bears, and red cardinals are hard to explain. Too, the human eye probably does not have the same limits of vision as predator species. A bird hidden to us may be readily visible to a hawk or vice versa.

According to human standards, then, protective coloration occurs in some animals but is lacking in others. It is a subject not fully understood and should provide interesting material for field observations and thought for many years to come.



Department of Letters to the Editor, Field Notes, and Items of Interest

Conducted by WIN DONAT

SOMETIMES A CHANGE OF SCENE AND CLIMATE are prescribed for hay fever sufferers. Surely a change for the better in anything should be welcomed. That is why we have a new heading for this page.

Regardless of this change, this is still your page—it is still your chance to get it off your chest. We welcome your questions, stories and reports of things of general interest occurring in the field and relating to hunting, fishing, and conservation. Won't you, our readers, continue to help us to make it an even greater attraction?

Remember our address—Box 2919, Raleigh, North Carolina. We will be happy to receive your contributions to this page.

W. D.

Mr. James B. Ewart of Hendersonville, N. C., really gets it off his chest in the following letter:

"I was much impressed with Mr. Bill Hamnett's article 'A Roaming In The Gloaming' appearing in the May issue of the very excellent magazine, WILDLIFE IN NORTH CAROLINA.

"There are two very unfortunate facts in connection with Mr. Hamnett's article. First, the great majority of the owners of dogs which roam the country side have never heard of the magazine WILDLIFE, much less read the article. Second, even if such dog owners read the article they would make little or no change with respect to their dogs.

"My comments in this letter are based entirely on my own personal experiences and observations in this section only, but from limited observation in other areas of the mountain section and comments made by others, the same conditions exist throughout the mountain section and apparently throughout the state.

"Night and day, winter and summer, dogs singly, in pairs and in packs, roam the countryside almost daily. The real mystery is not why is there not more game, but why is there any game left at all. Certainly our two most popular small species, rabbits, and quail, along with other ground nesting animals and birds, have practically no chance whatever to rear their young. We learned from Herod that a sure way to reduce population is to destroy the young. It takes little imagination to visualize how quickly a single pair of quail, pheasants and rabbits can restock a very considerable area if they remain unmolested. One hears the opinion expressed quite frequently that we have so few quail because they are killed by the insecticides used on truck crops. Practically all such insecticides are non-poisonous to human beings; the lethal portion being pyrethrins and rotenone. The opinion would appear to be erroneous in view of the following quoted from the U. S. Department of Agriculture's Farmers' Bulletin No. 1397: 'Quail, pheasants, grouse, domestic chickens and turkeys are highly resistant to strychnine poisoning,' one of our most deadly poisons. Another opinion expressed is that we have no ringneck pheasants because of the lack of winter food. This prompts one to ask where do pheasants get winter food in the great pheasant state of South Dakota when the ground is covered with deep snow for the greater part of the winter?

"Not so long ago we had the fence laws which permitted anyone to range their cattle, hogs and other livestock on any and everyone's land unless the landowner built and maintained a 'hog tight fence' to keep the stock out. The repeal of such laws caused much hard feeling and some bloodshed but the fence laws are gone forever, with the possible exception of a few remote locations. The roaming dog of the present day appears to fall in the same category as the livestock of the fence law days, but of course there is no practical way to fence one's property against roaming dogs.

"When one criticizes the existing order of things they should at least offer suggestions for improvements. The following suggestions will be recognized as being in no sense original:

"A pair of good dog catchers backed up by adequate laws will result in the restoration of more game than a score of

game protectors. Require every dog owner to see that his dogs wear numbered license tags which identifies the dog's owner in exactly the same manner as an automobile license identifies the car owner. Any dog taken by a dog catcher is to be placed in a pound and a considerable sum be required to redeem it. If not redeemed the dog is mercifully destroyed and the owner is barred from future dog ownership until the redemption fee is paid. A real intensive educational program pertaining to restoration of game should be conducted in our public schools.

"I fully recognize the right of the majority of any local population to have roaming dogs in preference to game if they so wish, but there is little sense in anyone kidding themselves as Mr. Hamnett has brought out in a subtle way. Regardless of individual or neighborhood opinions every property owner must certainly have the right to protect his property from the roaming dog for we no longer live in the days of the fence laws.

"While I am no pessimist the elimination of the roaming dog is just about as difficult as the elimination of the sacred cow in India, but until he is eliminated the many thousands of dollars being spent on game restoration are largely being poured down the proverbial rat hole."

WILDLIFE IN NORTH CAROLINA long has campaigned for the control of all house pets during the spring and summer months. More than a few small voices crying in the wilderness are needed if this serious condition is to be changed. The 1951 General Assembly provided the legal support for action by the counties and some few county commissions have set up their dog control officers. But the full force of public opinion has not been aroused in any large areas of the state. Where do your county commissioners stand?

Carp Recipe

The following letter was to J. H. Cornell, Chief of the Commission's Fish Division and author of several recent letters to "Dear Joe" appearing in WILDLIFE. We pass it on to you who want to try the pet recipe of Mr. R. C. Hill of Albemarle, North Carolina:

"I have just finished reading your letter in the August issue of WILDLIFE as to preparing or dressing carp so that no muddy taste can be detected in eating.

"For many years I have been a carp fisherman and I would rather have a carp to eat than any other fish known. First the carp must be kept alive up to the time for dressing. This can be done by using a sack, preferably a potato bag. Drop the fish in the bag and let it stay in the water while fishing and they will be alive on a short travel from the water when the day is over. Kill the carp, dress the fish just like dressing any other fish, cut them up in pieces, pile in a deep dish pan, have plenty of boiling water and pour over the cut up pieces in the dish pan. Drain off the boiling or hot water, rinse the entire cut pieces in the pan with two to three operations of cool water and spread out the pieces to dry for a few minutes. There will be no muddy taste whatever in carp when they are cooked. There is no need to skin a fish and the skin on a carp gives a most excellent flavor when prepared as I have outlined the above.

"I have given the above instructions to many people here in Stanly county, Albemarle, North Carolina, and it certainly does the trick.

"It has been stated time and time again that all fishermen are liars. Well, the truth always triumphs, and I am sure there are many honest fishermen."

A Bouquet We Appreciate

"Dear Sirs:

"I happened to look at one of your magazines (WILDLIFE IN NORTH CAROLINA) and liked it very much. I did not know that North Carolina published an outdoor magazine until I saw this one. It was the August issue and I think the front cover was very good too. I am an ardent hunter and fisherman, and conservationist. I have always loved North Carolina's forests, streams, and beautiful lakes. I shall always do my utmost part to preserve them as any real nature lover should do. I would appreciate it very much if you would start my subscription with the September issue. I remain,

Very truly yours,
Signed Charles D. Staley
1508 14th Street
Greensboro

What Do You Think?

Everyone is entitled to his own opinion, and Mr. George F. Carroll of Leland, North Carolina, expresses his about alligators as follows:

"I have been taking WILDLIFE for sometime and enjoy it very much, but I certainly can't agree with you on protection for the alligator. He is a nuisance in eastern North Carolina. He destroys waterfowl, perhaps more wood ducks than all hunters kill, as the wood duck and the alligator use the same range.

"While the ducks are raising their young ones the alligator may destroy your favorite duck hunting dog if it should happen to be a warm winter.

"The alligator is not good for anything except his hide and we can get along very well without it. If we want to protect either one let's protect the diamondback rattlesnake and do away with the alligator. The snake may bite your best dog and the dog get over it, but if the alligator swallows your dog he doesn't have a chance. In my opinion it would be a poor game protector that would not kill an alligator if he got the chance, if he knew them like I do. Check your sportsmen in eastern North Carolina that hunt and travel marshlands and see how many favor protection for the 'gator.

"I really like WILDLIFE and read most every line in them and think it is just grand."

CONSIDER THE LANDOWNER

The hunter that shoots carelessly around livestock will not be invited to hunt again. It is only right to ask permission to hunt and then to respect private property.

LICENSE DEALERS BONDED

Mr. A. E. Johnson of Raleigh is shown issuing a hunting license to a customer. This year the Wildlife Resources Commission began a policy of having its license dealers bonded as a measure to protect both the dealers and the Commission from any financial loss. Each license dealer pays the small fee for the bond. Johnson's certificate of bond can be seen at the top of the picture. The Wildlife Commission is unique as a state agency in that it is not supported by taxes, but by receipts from the sale of hunting and fishing licenses.

Field Trial Notice

Probably one of the first large trials devoted exclusively to grouse dogs will be held on the Standing Indian Wildlife Management Area, sixteen miles west of Franklin in Macon county, Saturday, November 24, 1951.

The newly formed Western North Carolina Field Trial Association, sponsors of the event, announce that Mr. Howard D. Pavey of Flint, Michigan, Mr. E. G. Smith of Pittsburgh, Pennsylvania, and Mr. Gene Galloway of Marienville, Pennsylvania, will judge the trials. Mr. Galloway is known as the developer and handler of "Sam L's Skyrocket" and "Hall's Black Rocket."

Drawings will be held the night of the 23rd at the headquarters in Franklin.

A New Game Species?

Wildlife Protector Melvin E. Hill of Snow Hill, Greene county, gives us the following note from the field:

"The other day I was visiting with one of my farm friends, Mr. Harvey Suggs of Snow Hill, North Carolina. He was curing tobacco with wood. He had to get a piece of wood to put in the furnace and a large wharf rat ran out from under it. About that time along came his coon dog around the tobacco barn and struck his track, and ran it about 400 yards into a fish pond which was about an acre large. The rat swam out into the middle of the pond, and the dog kept right behind it. The rat was shot and killed when it came back out.

"Mr. Suggs said before this the dog ran one to the swamp and treed him just as if it had been a coon."

Of General Interest

We never know when our hunting adventures may land us in the Hall of Fame. The Boone and Crockett Club of 5 Tudor City Place, New York 17, New York, has for many years been keeping the authoritative records of outstanding big game specimens brought to bag throughout the country. It may be that you have at one time or another killed a bear, deer, or boar in North Carolina which, if brought to the attention of the Boone and Crockett Club, would have been a record trophy. It can happen here! In the past ten years, a deer and a bear were taken from the Lake Drummond area in Dismal Swamp near the Carolina line, that made the big game Hall of Fame. Perhaps a deer, bear, or boar you will take this year will be a record, *if you enter it.*

Whose Fault Is It That They Don't Know?

RECENTLY WHILE DRIVING ALONG a secondary road and approaching a short narrow bridge, I noticed two bicycles lying on the left side of the road and on the same side of the bridge were two pairs of shoes. Noting the shoes belonged to children, I crossed the bridge, drove off the pavement, parked the car, and walked part of the way under the bridge to find them. There they were—two bright-eyed, barefoot, summertime appearing, peppy lads.

They looked up at me and words can never describe their expressions. In a quiet, calm tone, I asked, "What are you boys doing?"

As quick as a flash and as innocently as anyone ever admitted anything came the answer, "We're shooting fish! Just look, we've killed a nice pile." And sure enough they had several bluegills. Having had much experience with boys of their age, I was immediately convinced of their innocence.

The following moments a short sermon was preached. It is difficult to name the text, but they sincerely apologized and thanked me for informing them of the misdemeanor and promised they would try to obey the laws in the future.

In the meantime, I had coaxed them to the car and gave them much material on wildlife conservation. One turned to the other and said, "Now we can read instead of killing. We're glad you came along." But before I left, I asked them their names. They told me very proudly. It happened that I knew their fathers and their grandfather. Since their grandfather was a very highly respected citizen, I reminded them of the fact.

Why was this little incident written? It is a reminder that the time has come when some one should inform children. Today too many adults and children desire entertainment rather than information. I sincerely believe these children would have never shot fish had they known it is illegal.—*Lunette Barber, Wildlife Education Representative.*

Banding of North American birds reached a postwar high in 1950, due to emphasis on the use of this medium in the study of waterfowl migration, and as a result of State-sponsored banding projects under the Federal Aid to Wildlife Restoration program. Almost 350,000 birds were banded during the year, with 23,000 banded birds recovered, the Fish and Wildlife Service reports.

WILDLIFE PROTECTION DAY

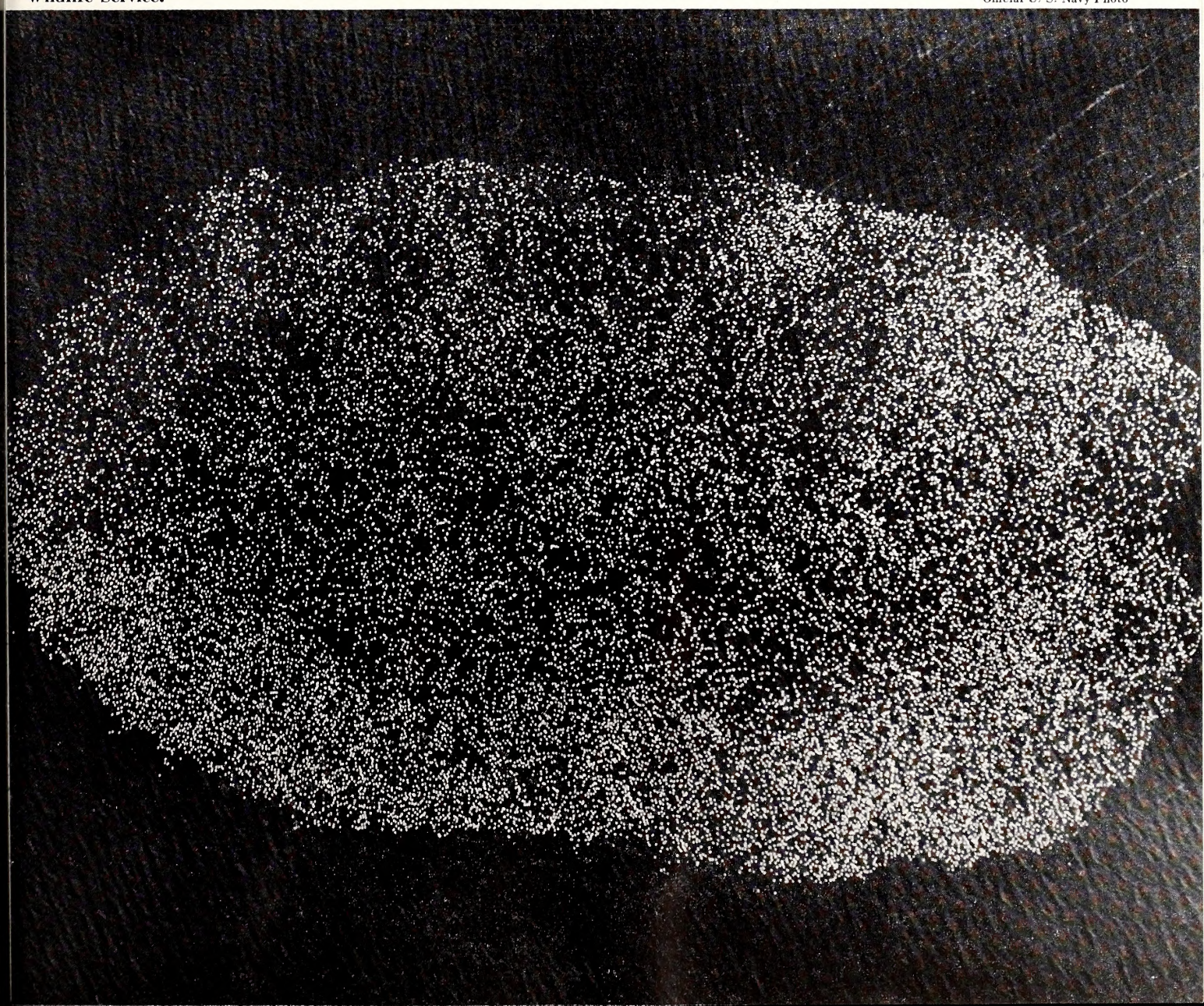
Thursday, November 22, 1951, has been designated as Wildlife Protection Day by the Wildlife Resources Commission. All Commission personnel and deputy wildlife protectors will go into the field in a united effort to stop violations.

This marks the second annual observance of Wildlife Protection Day—a day dedicated to fair play and equal sport for all. All sportsmen are encouraged to observe Wildlife Protection Day and to cooperate with Commission personnel by obeying game laws themselves and demanding that others do so. Let's make Wildlife Protection Day successful and significant.

GUESS THE NUMBER OF SNOW GEESE

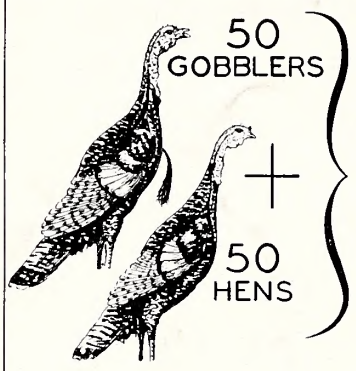
This remarkable aerial photograph of wintering snow geese was taken in the Back Bay-Currituck Sound area of North Carolina. It demonstrates some of the problems census takers encounter in tabulating waterfowl populations. At first glance, an accurate count may seem impossible, but the geese were actually counted from a 20 by 24 inch photograph which had been divided into half-inch squares. The count totalled 25,436 geese. The picture was made by the U. S. Naval Air Corps in cooperation with the U. S. Fish and Wildlife Service.

Official U. S. Navy Photo



Why We Shoot . . .
. . . Gobblers Only

Let's Talk Turkey

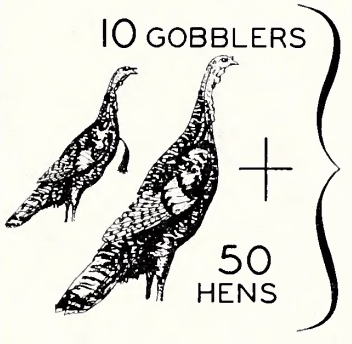


= 275 FERTILE EGGS (50% HENS LAYING) = 137 EGGS HATCH (50% SUCCESSFUL) = 62 ADULTS PRODUCED (45% SURVIVAL)

FACTS AND FIGURES SHOW THAT IN ORDER TO ASSURE THE FUTURE OF THIS GRAND GAME BIRD AS WELL AS TO PROVIDE AN ADEQUATE SUPPLY FOR THE PRESENT HUNTING PRESSURE –

= 55 FERTILE EGGS = 28 EGGS HATCH = 13 ADULTS PRODUCED

IT IS NECESSARY THAT THE SPORTSMEN PUT REAL CONSERVATION INTO PRACTICE AND WORK TOGETHER WITH A COMMON PURPOSE TO ACHIEVE THE AIM OF BETTER HUNTING FOR ALL – LET'S



= 275 FERTILE EGGS (40 FINE BIRDS FOR THE SPORTSMEN) = 137 EGGS HATCH = 62 ADULTS PRODUCED

SAVE the HENS

TURKEY DATA BY BOB WHEELER

WIN DONAT

WASHBURN PRINTING CO., CHARLOTTE, N.C.

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(Photo by Jack Dermid)

The Harvest

Game management is similar to livestock production. In both, live animals are raised on the land to produce a surplus—livestock for the market or game for the hunter's bag. It is good conservation, then, to harvest the excess wildlife crop each season lest its food and recreational values go to waste. But it is folly to harvest too much and to destroy the breeding stock.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

W. KERR SCOTT
Governor

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COVER

Win Donat portrays two ruffed grouse amid a Christmas setting of snow and evergreens. Being near the peak of its population cycle, the grouse or "pheasant" should provide excellent sport for Tar Heel gunners this season.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Win Donat ..... *Art Editor*
Marty Mabry ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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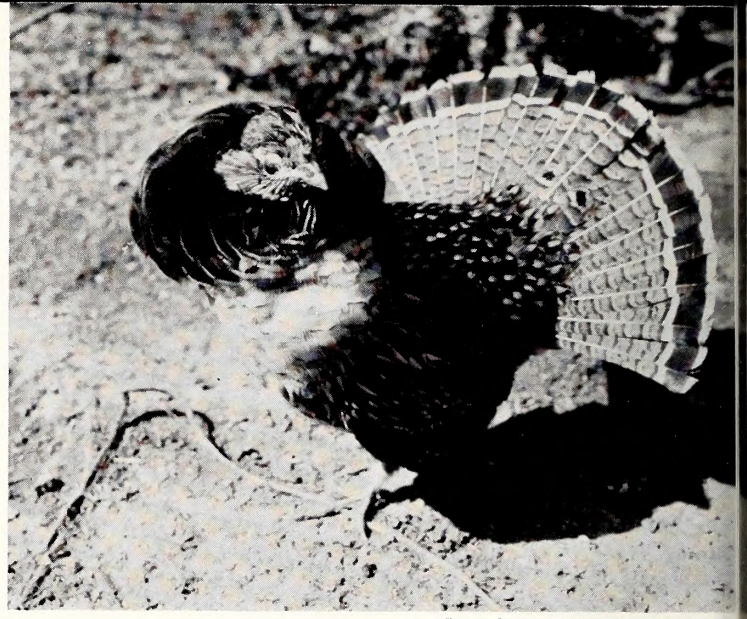
Fish and Wildlife Service Photo by F. C. Hardy

This remarkable photograph shows a male grouse performing on its drumming log. The characteristic drumming sound is produced by a rapid beating of the wings against air.



Pennsylvania Game Commission Photo

Should the drumming attract a female, the cock will seek her favor by strutting and displaying its ruff (above); but if a male answers the call, a fight will likely ensue.

LET'S LEARN *About Our Wildlife*

The Thirty-Fifth of a Series on The Wildlife Species of North Carolina

THE RUFFED GROUSE

by Rod Amundson

History

SO MUCH HAS BEEN WRITTEN about the ruffed grouse that it would be impossible to do other here than list some of the more important facts about this interesting and highly important game bird.

The ruffed grouse is closely related to the bobwhite quail, the pheasant and the wild turkey, being a gallinaceous (chicken-like) upland game bird. Even closer relatives of the ruffed grouse are the prairie chicken and sharptail of the western plains, and the sage grouse of the semi-arid states. Although ruffed grouse are confined to the mountain counties of North Carolina, they once extended their range out into the Piedmont.

When North Carolina was first settled, grouse afforded easy meals to pioneers. Grouse are notably a species of wildlife having little natural fear of man. Through the inroads of civilization, however, grouse in North Carolina have been pushed back farther and farther into the wilderness areas of the mountains, and are now among the most cautious and wary of game birds.

North Carolina lies almost at the extreme southern reach of the grouse range. The ruffed grouse is usually considered to be a northern bird, but the high elevations of the Appalachian range affords them suitable habitat as far south as northern Georgia.

Many Tar Heels refer to the ruffed grouse as "pheasant" although this latter name more acceptably applies to the ringnecked pheasant and kindred species imported from Asia. The ruffed grouse is distinctly an American bird, and one of the more important native game birds of North Carolina.

Characteristics

Writing in 1919, Brimley stated: "Perhaps the most striking characteristic of this grouse is the habit the male has of 'drumming.' " Many are the tales as to how male grouse sound their deep, rolling drumming sound that can be heard a mile on a still day. Some believe it to be the wing feathers beating on the drumming log. Others think it to be a vocal sound. Actually, the sound is made by a rapid beating of the wings against air. Tone and rate of vibration varies with the speed and intensity of the beating. Male grouse almost invariably do their drumming on a fallen log. This fact is what probably has given rise to the fallacy of beating the log with the wings. The drumming sound is either a mating call to attract females into the harem, or a challenge to other males, depending on the season. Once heard, the sound of a grouse drumming is something never to be forgotten.

Grouse are much larger in size than quail, being about the size of a small chicken. The arrangement and texture of the feathers give them a somewhat misleadingly large appearance, but a brace of grouse on the dinner platter will furnish food for several people. The average weight is 26 to 28 ounces, and the average adult male is about 18 inches long.

In color the sexes are marked very much alike. A detailed description of a ruffed grouse would require several pages of type. Suffice it to say that the general color is a mottled, barred, and ringed, a general brown to buff body color with lighter and darker color. Distinguishing the male birds is a ruff of feathers on the neck, a smaller one on the females. There is a crest of feathers on the heads of both sexes. This as well as the neck ruff can be erected. The neck ruff is the feature which gives the species its name.

In flight, ruffed grouse become the most difficult of targets. They explode out of heavy cover and dart quickly into more heavy cover, leaving only the quickest shotgun handler a fair shot at the prize.

Grouse usually roost in trees during the spring, summer, and fall, but in the winter when there is deep snow they bury themselves in a snowdrift for a comfortable night's rest. Often these amazing birds will plow into a snowdrift from full flight, completely disappearing in the snow and leaving only the disturbed snowflakes to show where they alighted. Since the embedding in snow usually occurs on the south side of a slope, it is seldom the birds become trapped by crusting over of the snow.

Food Habits

The food habits of the ruffed grouse are almost a complete index of the vegetation and insect life of their environment. The diet varies with the seasons, fruits and berries being the favored items during late summer and fall, tender buds of shrubbery during the winter and spring, and insects, grass, and tender shoots the spring and early summer diet.

Mating

Male grouse are polygamous, and will assemble as many hens together in a harem as they find it possible to attract. Once mating has occurred, the hens steal away into the woods to build their nests, lay the eggs and hatch them. Male birds have nothing to do with the family life other than to sire the young.

During the season of harem assembling, there are many battles royal among competing cocks. The sounding of the mating drumming may attract a hen whom the cock seeks to add to his harem by a great deal of ruffing of feathers, strutting, and general showing off. If the drumming attracts another cock, however, there is apt to be a battle. Each cock seeks to establish for himself a territory of operations, and will drive off intruders if he is physically capable of doing so.

Nesting

Grouse hens usually select a very well secluded spot for forming the nest. The nest may be located at the base of a tree stump with plenty of shrubby cover, in the top of a fallen tree, under a brush pile, or any spot which affords some protection from predators.

Eggs vary from eight to fourteen, and are of a pale buff color that blends well with the nest materials. Incubation usually takes place in May, and the downy chicks are precocious from the time they emerge from the egg. The mother bird accompanies them in strolls through the woodlands and over the slopes in search for food, sheltering them with her protecting feathers during the night and during inclement weather. Grouse grow rapidly, and by late fall are almost fully matured.

Enemies

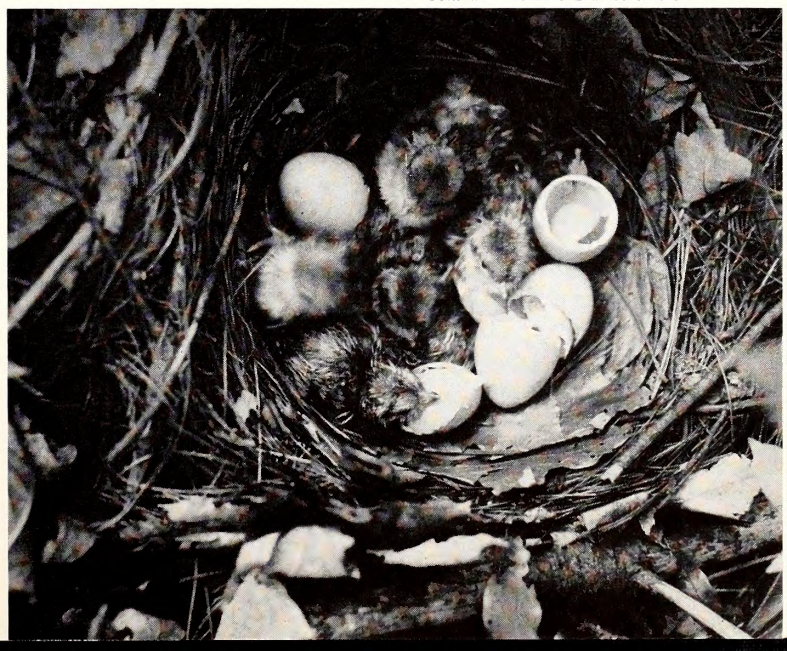
Grouse are highly susceptable to predation. During the incubation period they risk the inroads of semi-wild pigs

●——————See RUFFED GROUSE Page 19

Pennsylvania Game Commission Photo

A grouse perched in a sumac shrub. Besides insects, grouse feed on a wide variety of seeds, fruits, leaves, and buds. Below: Newly hatched grouse chicks.

Fish and Wildlife Service Photo



Food AND Cover PLANTS FOR MORE WILDLIFE

This is an important article for landowners, sportsmen, and individuals interested in improving wildlife habitats. It summarizes the Commission's Farm Game Restoration Program, describes valuable wildlife plants — bicolor lespedeza, sericea lespedeza, and multiflora rose — and tells how the plants can be obtained without cost.

NOW IS THE TIME TO PLACE ORDERS for bicolor lespedeza seedlings, multiflora rose plants, and sericea lespedeza seeds. A huge demand for these materials is anticipated by the Wildlife Resources Commission this year. Over 4,000,000 bicolor seedlings, thousands of pounds of sericea seeds, and thousands of rose plants will be available to North Carolina landowners. Deliveries will begin about November 15 and continue throughout the winter and early spring planting season. Order today!

Farm Game Restoration Program

The day of the split-rail fence and bushy fencerow is gone. The old methods of agriculture which favored farm game species with abundant food and cover has been replaced by new, efficient clean farming techniques. It is the story of progress and prosperity—the story of making each square yard of land attain maximum production to supply demanding markets. The result was not all good, however, for within the wake of modernization farm wildlife populations dwindled severely. Clean farming had eliminated a vast acreage of food and cover plants.

Realizing that wildlife needs adequate habitat to survive and to produce good hunting, the Wildlife Resources Commission inaugurated a farm game restoration program. The program is a modern one designed to fit into the scheme of modern agriculture by benefiting the landowner as well as wildlife. It involves the reestablishment of wildlife food and cover plants without reducing crop production or interfering with farm operations.

Field experience has shown that three plants—bicolor lespedeza, sericea lespedeza, and multiflora rose—are very useful in North Carolina for wildlife habitat development without altering other land-use activities. The Wildlife Commission operates a nursery at the Sandhills Wildlife Management Area near Rockingham for producing planting stock which is distributed free of charge to anyone desiring to plant it for wildlife. To make the farm game restoration program more effective, a district biologist is stationed in each of the nine districts of the State. They assist landowners in selecting good planting sites, and serve as consultants on all local wildlife matters.

Bicolor Lespedeza

Bicolor lespedeza is a bushy perennial legume introduced from Japan. It attains a height of six to ten feet on moderately fertile soils. Being an ornamental, bicolor adds a trim "new look" to the landscape. Delicate green leaves appear in the spring which are followed by an abundance of small purple flowers during the summer. Mottled green and brown seeds ripen in October and persist throughout the winter. The plant is most valuable to quail and other species by maintaining a dependable late winter food supply when other foods have been depleted. It is during this critical season that the wildlife carrying capacity of the land is determined.

Bicolor is most useful in field borders, hedges, and food strips through woodlands. It is a hardy, dependable plant that will live for many years. It is somewhat shade-tolerant, and withstands burning, disking, cutting, and rabbit use during the winter.

Each field border or strip of bicolor should be about 500 feet long and about fifteen feet wide. Such a strip, when planted according to specification, contains 1000 seedlings, the minimum number recommended for any single planting site. Complete planting instructions are included in each bicolor shipment.

Besides providing a reliable source of food for wildlife, bicolor lespedeza has many advantages over native vegetation planted for similar purposes. It is of multiple use to the landowner by controlling erosion at field edges without encroaching upon cropland, by preventing the invasion of fields by trees from woodland borders, and by producing flowers attractive to bees.

Last season the Wildlife Resources Commission distributed free 3,840,200 bicolor seedlings or enough to plant a fifteen foot strip nearly 350 miles long. Over 4,000,000 plants will be distributed this year, but the demand is so great that each cooperator will be limited to 2,000 plants.

Sericea Lespedeza

Sericea lespedeza is a legume native to Asia that has proved its worth in soil erosion control and in the production of wildlife cover. It is a deep-rooted somewhat bushy perennial attaining a height of about three feet. Once established, it maintains itself and crowds out any shrubs which may attempt to come in.

Although sericea lespedeza produces an abundance of seeds, which are taken to some extent by wildlife, it is most valuable to quail and other farm game species as escape, loafing, and roosting cover. It is often planted in strips ten to fifteen feet wide on the field side of bicolor borders, particularly where other types of cover are lacking. Since bicolor alone does not always provide adequate cover for quail, sericea and bicolor make a good combination.

Sericea lespedeza is valuable to the landowner for erosion control, making perennial guide lines for field contours, keeping undesirable weed and shrubs out of cropland, and providing suitable turnrows on cropfield edges. It also produces a good hay crop.

Sericea seeds are planted by broadcasting at the rate of fifteen to twenty pounds per acre. Complete planting instructions are furnished with each shipment of seeds. Last year the Wildlife Resources Commission distributed free nearly 5,000 pounds of sericea seeds.

Multiflora Rose

Mutiflora rose, another import from Asia, is a thorny shrub averaging eight to ten feet high on good soils. It is distributed by the Wildlife Resources Commission to produce "living fences" to replace conventional clean wire fences. This "living fence" provides excellent cover and lanes of travel for quail, rabbits, and other species as well as nesting sites and some food. It is remarkable in that it is easy to plant, requires no maintenance, and is cheaper than woven wire fencing, yet will hold farm livestock, except poultry, within four to six years after planting. It does not spread promiscuously over the landscape like other wild roses. There is no record of multiflora rose becoming a nuisance in North Carolina.

Multiflora rose produces a beautiful fence, too, the long, arching branches bearing clusters of small white flowers in April or May. The fruits ripen and turn red in the fall and persist until spring except when eaten by birds.

In addition to wildlife uses some of the advantages of multiflora rose over other fencing materials are: It eliminates trespassing along property lines, serves as a firebreak, and can be planted on contours where conventional wire fences are difficult to build due to lateral

Besides providing good food and cover for wildlife, a field border of sericea and bicolor lespedeza is valuable to the landowner for curbing erosion and preventing the invasion of cropland by trees.

Multiflora rose produces a dense, vigorous "living fence" capable of turning farm livestock. Below: The Commission operates a nursery at the Sandhills Wildlife Management Area for growing bicolor and rose planting stock.

Photos by Jack Dermid

stress. It helps control wind and water erosion in adjacent fields. Crops can be planted to the edge of the fence without loss of production.

Multiflora rose plants are planted in a single row one foot apart. If the site is prepared properly and fertilized, growth will be rapid and vigorous. Complete planting instructions are included in each rose shipment. Last year the Wildlife Commission distributed free 400,000 rose plants. Supplies will be limited this season; so orders should be placed immediately.

How To Obtain Planting Stock

Application blanks for bicolor and sericea lespedeza and multiflora rose may be secured from district biologists, Soil Conservation Service personnel, County Agents, or by writing the Commission's Raleigh office. Besides indicating the number of plants and quantity of sericea seed wanted, each applicant should indicate the approximate date on which delivery is desired. Early planting increases the chances for survival. The maximum bicolor allotment will be 2,000 seedlings per landowner, and only a limited amount of multiflora rose will be available.

Return the completed application forms to your district biologist or to the Soil Conservation Service if it was obtained from that agency. Plants or seeds will be mailed or trucked to the applicants, who will be notified in advance of the approximate date of arrival. It is very important that plants be unpacked immediately upon receipt and planted or heeled in for safe keeping. The Wildlife Resources Commission supplies the planting stock free of cost to the landowner providing the landowner agrees to plant it according to recommendations. No plants are for sale.

DISTRICT BIOLOGISTS

District	*Biologist*	*Counties Served*
1	Ben H. James Route 3 Williamston	Bertie, Camden, Chowan, Currituck, Dare, Gates, Hertford, Hyde, Martin, Pasquotank, Perquimans, Tyrrell, Washington.
2	A. D. Ennett Swansboro	Beaufort, Carteret, Craven, Duplin, Greene, Jones, Lenoir, Onslow, Pamlico, Pender, Pitt.
3	Charles B. Woodhouse Holly Springs	Edgecombe, Franklin, Halifax, Johnston, Nash, Northampton, Vance, Wake, Warren, Wayne, Wilson.
4	Sam F. Poole 200 West 8th St. Lumberton	Bladen, Brunswick, Columbus, Cumberland, Harnett, Hoke, New Hanover, Robeson, Sampson, Scotland.
5	Donald J. Hankla 110 Glenwood Ave. Burlington	Alamance, Caswell, Chatham, Durham, Granville, Guilford, Lee, Orange, Person, Randolph, Rockingham.
6	David L. Taylor P. O. Box 91 Hoffman	Anson, Cabarrus, Davidson, Mecklenburg, Montgomery, Moore, Richmond, Rowan, Stanly, Union.
7	Ted R. Mitchell 907-A4 N. Center St. Statesville	Alexander, Alleghany, Ashe, Davie, Forsyth, Iredell, Stokes, Surry, Watauga, Wilkes, Yadkin.
8	Robert B. Hazel Route 2, Box 300-A Morganton	Avery, Burke, Caldwell, Catawba, Cleveland, Gaston, Lincoln, McDowell, Mitchell, Rutherford, Yancey.
9	Rex L. Bird 1619 Kensington Dr. Hendersonville	Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Polk, Swain, Transylvania.

REPORT THAT BAND!

You can help biologists unravel the mysteries of migration, information vital for the development of a sound waterfowl management program, by returning leg bands and complete kill information to:

Fish and Wildlife Service
Bird Banding Office
Laurel, Maryland

Include the following facts: (1) Serial number of band, for the band may be lost from envelope. The band can be flattened and held down with scotch tape for mailing. (2) Species of bird; its sex and age if known. (3) The locality, nearest town, county, and state where bird was killed. (4) How bird was obtained. (5) Date. (6) Your name and address. A complete history of the bird will be sent to you.

DUCK HUNTING IN 2000 A.D.

by **Harlow B. Mills**
Illinois Natural History Survey

• *From a Speech Presented at the 12th Midwest Wildlife Conference, Columbus, Ohio*

THE YEAR IS 2000 A. D. Let us drop in on a party which is preparing for a duck hunt. In a hotel in a small city members of the party are sound asleep as dawn approaches. The room is comfortably heated from a central heating unit located in the state capital, from which the heat is transmitted in underground pipes as are oil and gas now. At 4:45 A. M. the alarm goes off. A dial on the wall had been set the night before, and the alarm clock synchronized with a certain power wave emitted from the county seat time control radio beam at this hour. The hunters rise, eat a concentrated breakfast in a couple of minutes, don insulated suits, and go out to a streamlined car at the curb. Even though the weather is cold and blustery they realize that they will have to lower the ventilating flaps in these suits in order to stay comfortably cool.

The noiseless car slides into the street, the only sound the purr of the tires against the pavement. The hunters look at their tickets. These paper permissions notify them that they are to progress to a point designated as A-3751-28b. They had studied the map the night before and know that A is the designation of duck hunters, that 3751 is the location of the marsh, that 28 is the blind, and that b means that they can use the left half only.

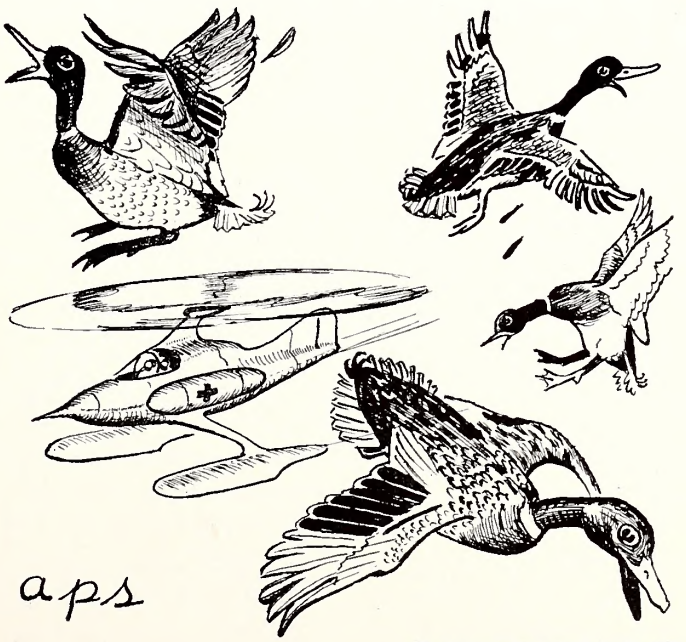
As they speed down the road luminescent signs direct them at the junctions, and twice they are stopped by uniformed officials who inspect the tickets and wave them on their way with traffic flashlights. Cars are ahead of them and behind them, turning at various intersections to reach different destinations. In a field close to the road they observe a landowner in the grey dusk of dawn with an ultrasonic radiator slung over his shoulder. He is doing two things. First, he is flushing all of the pheasants and quail off his property to keep careless hunters away, and second, he is flushing wounded birds in the hope of catching them to turn in to the game officials for the $5 per head reward. The wounded birds would go to the immaculate game hospital where they would be rehabilitated and returned to the fields.

Finally they are at the parking place. Removing their equipment from the car, they lock the vehicle with the magnetic lock, and walk to the shore. Here they climb into a closed cab suspended from a cable, push a button, and are soon speeding out into the center of the marsh to their blind 28, side b.

By this time it is possible to see fairly well and they note other blinds at 50-yard intervals all over the marsh. They have a good situation on the marsh, better than most, but they have no concern about getting their limit, for ten years before all limits had been removed, and they can take as many ducks as they can shoot.

One of the men hangs a tiny radio on the side of the blind, much to the satisfaction of the occupants in 28a who have forgotten theirs. A voice comes out of the tiny speaker. "Will the person in blind 63 return to his car and turn off the parking lights?" Then, after a pause, "Gentlemen, this is the opening of the duck season for the year 2000. We are pleased that we have been able to eliminate limits on the take of ducks again in the year 2000. We are nevertheless unhappy that we must still insist that you can use only four shells this year. Remember, if you use one today it will leave you only three for the rest of the season." One of the

•——————**See DUCK HUNTING Page 20**



Illustrations by Arnold P. Sherrill

Winners of the thirteen inch female class. See chart of winners on this page for names of dogs and owners. Read from left to right. Below: First place winners of the fifteen inch female and fifteen inch male classes: Parker's Carolina Lady (left) and Cripple Creek Meddler.

BEAGLE PACK STAKES

THE U. S. SOIL CONSERVATION SERVICE LAND USE AREA east of Yanceyville in Caswell county, was the scene last September 22, of the finals in the first North Carolina Beagle Championship trials.

E. N. Morgan of Asheboro, Chairman of the Northern Carolina Beagle Club Association's trial committee, and his helpers ran the trials which found 47 eager participants at the headquarters desk early in the morning. The dogs in this group earned the right to run in the championships by having won preliminary trials held earlier by the clubs belonging to the Association.

The day was bright and warm, another in a long succession of rainless days, and every twig and leaf was covered with a coating of powdery dust making trailing

NORTH CAROLINA

Championshi

conditions next to impossible. Rabbits ran before the gallery and their exact paths were followed a few minutes later by hounds that gave no sign of interest in what should have been a fresh trail.

The foregoing was particularly true of the area hunted by the pack of 13-inch females, which ran in the morning. In addition, the cover was extremely tight, making judging difficult. The 15-inch males running in another area had slightly better conditions and a more satisfactory trial was witnessed by the judges and gallery.

W. A. Peterson, U. S. Soil Conservationist for the Area, his committee of Yanceyville Kiwanians and other citizens, fed the entire group at noon. Awards were made for the morning winners and the 13-inch males and 15-inch females were put down somewhat later than planned in the afternoon.

While the heat and dryness were intensified by the sun, both packs credited themselves in the handling of several rabbits and it was almost dark before the hounds were picked up.

As was stated before, this was the first event of its kind under the sponsorship of the Championship Field Trials Association of the North Carolina Wildlife Federation. These trials were, in a sense, the test of the area which comprises approximately 5,000 acres of protected land. If the beagle championships are repeated over the same area, and we hope they will be, a few adjustments in the arrangements should make these grounds the most popular in the state. It is significant that the State Foxhunters Association's annual trial, also reported on this page, was outstandingly successful and was held over the same grounds October 10, 11 and 12.

The Wildlife Resources Commission is making every reasonable effort to help the various groups interested in developing this area as a permanent running ground for as many different types of trials as it will support. How much will be done is contingent upon the acceptance of the area by the trial groups.

* * * *

FIELD TRIAL WINNERS

13-INCH MALES

Place	*Name*	*Owner*	*Address*
1	Parker's Ace	C. B. Parker	Statesville
2	Smokey Wade	Louis H. Gill	Durham
3	Round Mountain Jeff	W. S. Franks	Elon College
4	Riverbends' Bill	C. C. Kale	Mt. Holly
Reserve—Jo Ann's Knobby		M. D. Harrill	Forest City

by Win Donat

Field Trials

13-INCH FEMALES

1	Hardins Spindale Susan	Earl Hardin	Spindale
2	Stack's Dollie Sue	A. S. Jarrett	Charlotte
3	Coffeys Princess	R. M. Austin	N. Wilkesboro
4	Jones' Sally	Marvin Jones	Bennett
Reserve—Vernon's Rose		James R. Vernon	Leaksville

15-INCH MALES

1	Cripple Creek Meddler	Clyde W. Smith	Morganton
2	Pine Rock Leader	C. W. Gerringer	Spindale
3	May's Red Head	G. W. Swinney	Burlington
4	Yount's Pete	James A. Hewitt	Newton
Reserve—Melton's Bango		Charles Gantt	Conover

15-INCH FEMALES

1	Parker's Carolina Lady	Hal Huggins	Hickory
2	Smokey Mtn. Dottie	R. H. Bolick	Swepsonville
3	Mona Lee	C. P. Mason	Charlotte
4	Horner's Busy	Wayne G. Jones	Greensboro
Reserve—Mack's Blue Trixey		Charles D. Cassada	Durham

FOXHUNTERS' MEET

YANCEYVILLE HAS GONE TO THE DOGS! Heads and tails are wagging all over the place, and it's a toss-up whether Drum, Bugle, Nell or Bell will make the first strike. No, it's not a little World Series but the first meeting on the U. S. Soil Conservation Service Area of the North Carolina Foxhunters Association.

Association President I. T. Wilkerson of Concord, North Carolina, his staff of officers in cooperation with the Tar Heel Championship Field Trials Association which is sponsored by the North Carolina Wildlife Federation in cooperation with the Wildlife Resources Commission, have arranged the meet which will be an annually recurring affair.

Making arrangements to feed, house and entertain several hundred people over the normal population is a terrific task; yet, W. A. Peterson and his local groups consisting of foxhunters, Kiwanians and interested citizens apparently have solved the problem to the complete satisfaction of everyone and all the hounds who were interviewed gave an approving nod from their clean shavings bed in Judge Womack's livery stable.

The Yanceyville meeting began the night of October 9th with a bench show in the Bartlett Yancey High School gym. The rather small entry list, it was explained by those running the show, was caused by the fact that the field trail running was the big event and the showing

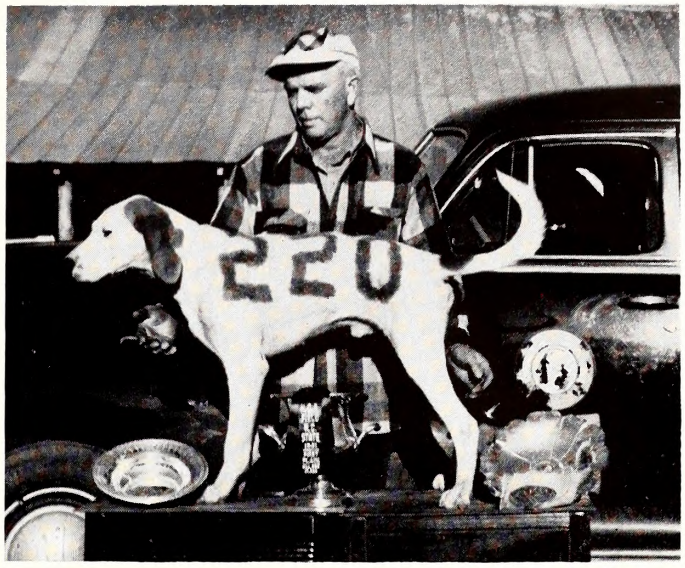


Photo by Win Donat

Buck Murphy of Bahama poses Domino, first place all age winner of the foxhunters' meet. Below: Winners of the bench show. See chart of winners on page 20 for names of dogs and owners. Read from left to right.

Photo by N. K. Hamilton

of dogs was of secondary interest. Also, with a field entry list running well over 250 hounds, many of the handlers were busy getting their charges' sides painted with official numbers.

A long line of all sorts of conveyances appeared at the casting grounds long before dawn the morning of the tenth. Entries were rechecked and at 6 A.M. the entire field of about 260 hounds was cast at the drop of the Hound Master's fedora. In five minutes, the entire area was covered with hounds on the move. Scenting conditions were fair but a wind which increased as the sun came up made it impossible to follow the chases as they developed.

At the end of each day's running, dogs were culled by the judges and those that were not performing up to requirements were dropped from the list. The runnings for the remaining days were a continuation of the se-

●——————See FIELD TRIALS Page 20

The groundhog or woodchuck digs extensive burrows that are a conspicuous indication of its presence.

Wild turkey and fox tracks follow the crest of a furrow across a cornfield. Turkey tracks are about five inches long.

Large, deep claw marks are proof positive that a black bear raided this apple tree.

Muskrats have used this run so frequently that they have dug out a deep channel.

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Animal signs, recogniz
as varied as the creatu
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tion, nests and burrow
left by all animals fr
mammal.

Masters of hunting
Indians knew well the
empty game bags mean
animal signs are usefu
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Few animals leave as many easily read signs as the beaver. Its cuttings, dams, huts, and trails are plainly evident.

Turtles leave distinctive trails when they move across mud flats. Marks of "shell," feet, and tail are shown below.

Prey and predator: rabbit tracks, left, and fox tracks. Rabbits hop with their paired hind feet forward.

Biologists can obtain a good estimate of a marsh's muskrat population by counting active nests, which average four or five animals each.

Signs

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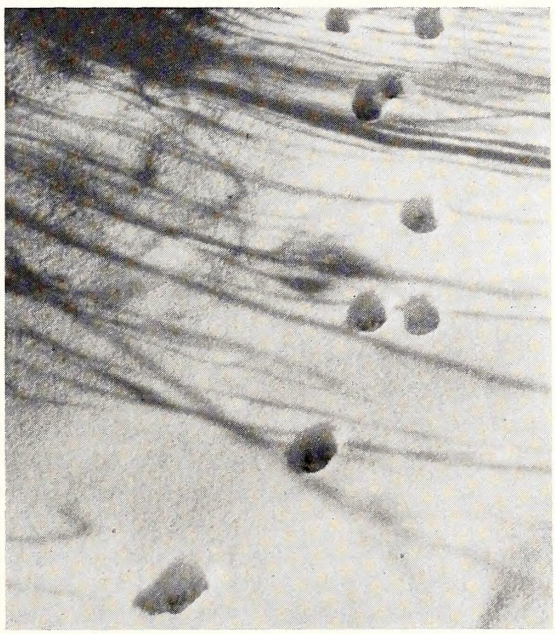
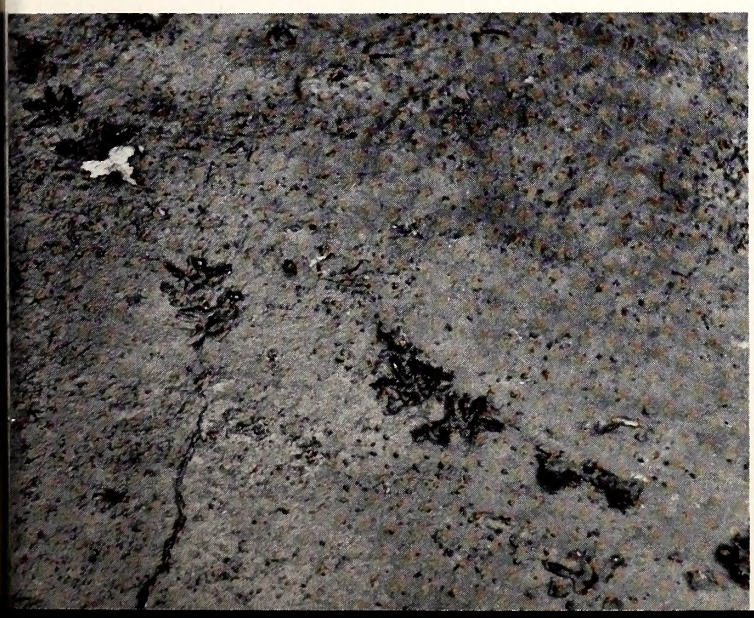


Snow is one of the best of tracking mediums. Here a domestic cat paused during its foray.

After the leaves have fallen, squirrel nests stand out conspicuously against the sky.

Opossum tracks are easy to recognize because the "thumb" print of its hind foot is at right angles to the prints of the other toes.



Clean, packed sand records the movements of many creatures. A sand or ghost crab poses at the entrance to its burrow.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Sportsmen Encouraged to Use Dogs

The Wildlife Resources Commission advocates the use of dogs in hunting waterfowl and upland game birds. Dogs not only help find game, but are of untold value in retrieving crippled or dead birds that are otherwise entirely wasted. Every year large numbers of ducks and geese are lost to hunters because of lack of adequate facilities for retrieving.

* * * *

Wildlife Protection Day a Success

For the second time the Wildlife Resources Commission designated Thanksgiving Day as Wildlife Protection Day and sent its entire staff of male personnel into the field to assist in the job of enforcing game laws and regulations. Thousands of hunters take to the fields on Thanksgiving Day each year with the opening of the season on quail, wild turkeys, rabbits, and this year, waterfowl.

* * * *

Fishing Regulations Set

The Wildlife Resources Commission met in Raleigh November 16 to set the rules for fishing in 1952.The meeting followed a public hearing in the Hall of the House of Representatives where fishermen were invited to express their views regarding next year's rules. Such hearings are part of the Commission's policy of giving sportsmen a voice in setting regulations for both hunting and fishing. The 1952 fishing regulations are in the process of being printed and will be distributed to license dealers in time for distribution on January 1, the date on which the regulations become effective. There were very few changes from last year's regulations.

* * * *

Dingell-Johnson Projects Under Way

Work has already begun on fish management projects made possible by funds received by North Carolina from the federal government through the provisions of the Dingell-Johnson Act. In coastal plains waters studies are under way to determine methods for improving fresh water fishing through coarse fish removal and other management devices. Another project will involve farm pond management, and a third will involve research at the Coweeta watershed in Macon county. This survey will determine the effect of forest land management on trout streams and trout fishing. This year about $42,000 in federal funds will be available for use in North Carolina Dingell-Johnson projects.

PISGAH FOREST — *Outdoor Conservation Laboratory*

Photo by John Anderson

Forest Service Biologist Charles W. Coffin discusses the history of the Pisgah National Forest with members of the Busy Bee 4-H Club before taking them on a tour.

by Lunette Barber
Wildlife Education Representative

IN THE SHADOW OF PISGAH NATIONAL FOREST near Brevard is an organized community group known as the Busy Bee 4-H Club, composed of sixteen energetic, enthusiastic, and industrious members. The club is sponsored by the Lamb's Creek Home Demonstration Club of Transylvania County and is under the leadership of one of its members, Mrs. J. L. Hunter.

What is unusual about this club? Each of the sixteen members is carrying a wildlife conservation project in 4-H Club work this year, and each plans to learn as much as possible about the Pisgah National Forest while carrying the project.

Why should the club be interested in the Forest? It is conveniently located for visits and is a good example of conservation or wise use of our natural resources.

They will learn:

1. That watersheds are protected, water supplies are safeguarded, and floods reduced.
2. That timber resources are managed and demonstration areas are maintained.
3. That ranges are managed to provide food for livestock.
4. That the forests are to be preserved for their beauty and recreational enjoyment.
5. That favorable habitat for wildlife may be maintained and wildlife may be protected.
6. That the resources of the forest may contribute to the economic stability and welfare of the community, state, and nation.

How can the club learn the above facts? It is true that leadership and interest are necessary. There is no shortage of that. Plans for the entire year have been made. Beginning with 4-H Club leaders of Transylvania County, Mr. W. W. Johnson and Miss Anne Benson Priest, who are overflowing with interest and exerting energy to maximum capacity to carry on the very best program possible, the Busy Bee 4-H Club will be given all aid possible. Their principal, Mr. Albert C. Shuford, and teachers of the Harry Strauss School, are cooperating wholly to promote activities for a good club. No greater interest has been shown than by the Pisgah Forest employees by gladly offering their assistance. Mrs. J. L. Hunter, club leader, will see that all work is well directed and coordinated. Each parent is also interested in the children's work.

It should not be forgotten that other excellent work is being done in the county. Just last year the county rated fourth in North Carolina in planting seedlings, and recognition was also given it for timber improvement projects.

How great it is to know that each individual has the privilege of promoting conservation education with the youth of our land and that it is a responsibility that we should assume. Others would do well to begin teaching children the value of the resources at hand and how to conserve them. It is an opportunity! Great dividends will be the reward for posterity.

Obituary

The Wildlife Resources Commission and its employees sincerely regret the untimely death of Wildlife Protector William G. Holler of Charlotte. Holler was killed in an automobile accident while carrying out his law enforcement duties on October 19, 1951.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

JOE DOAKS

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

How do I build a one-acre fish pond as a Christmas present for my brother Jim?

Very Truly Yours,

Joe Doaks

Dear Joe,

The very first thing to do is to visit your Soil Conservation Service office or the County Agricultural Agent and get someone to come with you to look at Jim's farm. They can tell you about the soil, and whether there is enough clay in it so the pond will hold water after it is finished. Sandy, gravelly, or shale soils are useless for dam construction unless there is clay available to build a good solid core up through the middle of the dam. Even then the dam may leak. It is a good idea to dig some test holes above the proposed dam site to find out what kind of soil will be exposed when the pond basin is scooped out. That will give you the best idea of the suitability of that particular location.

The next thing to think about is the water supply. The ideal situation is to have just enough water to make up for evaporation and keep the pond full. When the pond is fertilized, as it should be, excess water running through it is a waste of money.

On Jim's farm you have three choices for pond sites. You might build a dam across the creek and have a nice pond. You might put the dam on that little spring run below the barn where he waters the stock, and use the spring water to keep the pond full. Then there are two places where dams could be built to impound rain water. These are called sky ponds because there is no source of water supply except from the sky.

A pond on the creek would be an expensive proposition. You would have to build a concrete dam to hold up under flood conditions. It never could be fertilized because too much water would be going through the pond. Not the least of the considerations would be that every kind of fish in the creek would be in the pond to compete with the bass and bream for the food supply. Better forget that one.

A pond on the spring run below the barn would be much better. The flow looks awfully small, but it would be plenty to keep a one-acre pond full. It would be important to get rid of those little fish in the run before closing the drain on the dam, but when you are ready someone from the Wildlife Resources Commission will come to help you. He will provide a suitable poison, at cost, and will supervise its application to make sure that a thorough job is done in removing all of the wild fish in the run. After that the pond will have nothing in it except the bream and bass that you get from the Fish and Wildlife Service to stock the pond.

A sky pond would be the same in this respect. The only fish in it would be those you put in intentionally. It would have to be deeper, though, and the watershed would have to be larger. Since a sky pond depends entirely on rain for its water supply, it has to be deep enough that long dry spells will not dry it up. The watershed must be large enough so that the pond will fill up every time it rains. The trouble is that when rains are frequent, the large volume of water from the large watershed may wash out the dam unless it has a very large flood spillway. At best, frequent rains will make it impossible to keep the pond fertilized because of the large volume of water moving through the pond.

The spring run is your best bet, Joe. It is close to the house, and the pond will be convenient for fishing. By poisoning the run there will be no wild fish in the pond. There will be a constant small flow of water to keep the water level up. The only drawback is that you will have your one acre pond on a thirty acre watershed.

In order to prevent flood conditions every time it rains, a watershed of that size should drain into a pond of at least four or five acres. You can build a much bigger dam and have a five acre pond, which would cost a lot more for construction, or you can put in a diversion ditch which will catch most of the rain water and empty it into the run below the dam.

A ditch would be the best way to control the water for another reason. Some five or six acres of the watershed is in permanent pasture, and runoff from that should be allowed to go into the pond. The rest of the watershed is where Jim raises his cotton and tobacco. In order to get good crops, he dusts the plants with one of the various insecticides to kill the bugs that eat the leaves. The next rain after the plants have been dusted will wash some of the dust into the pond—and that will be the end of the fish. It is very important to have a diversion ditch between the pond and those fields. It will prevent excess water from coming into the pond and also prevent any possibility of insecticides getting into the pond after a rain. Unless the soil will not hold water, the spring run is by far the best pond site on Jim's farm.

As to the actual building of the dam, we just can't tell you how to do it in a letter. We are sending you a bulletin which describes how it should be built; and if you have any questions after you read it, write and ask us. There are several things, though, that are very important in building the dam for a good pond. You should remember to plan for each one as the work is in progress.

The first thing is to stake out the water line. This requires a transit, and the County Agricultural Agent or the Soil Conservation Service representative will be able to help you. Also, stake out the area to be covered by the fill when the dam is built. Stakes indicating the top of the dam must be at least two feet above the water level line to provide for the eventual settling of the fill.

In staking out the area to be filled, provision should be made for a two-to-one slope on both sides of the dam. That is, on both sides of the center line of the dam, at least two feet of the base must be included for each foot of dam height at every point in its length. Actually, the side facing the water should have a three-to-one slope to insure that there will be no erosion and sluffing of the dam face.

The stakes indicating the top of the dam at each end should be connected by a ditch extending down to clay so that the dam will have an impervious footing and water cannot seep under it. This ditch should be filled with clay, and a clay core should be built up from it right up through the middle of the dam as the fill is made.

Before any filling is done a drain pipe should be laid at the lowest level in the fill area. It must be long enough to extend beyond the line of fill stakes on both sides of the dam. It should be four to six inches in diameter for a pond of this size and might be of cast iron, corrugated metal, or well casing. An elbow should be fitted to the pond end of the drain pipe, and another length of pipe should extend from the elbow up to the proposed water level. This serves as an outlet for the normal flow of the spring when there is more than enough water to keep the pond full. The pond, then, can always be drained if necessary by turning the vertical section of pipe down flat into the pond bottom.

This is the simplest type of water control device to put in the dam. It should have at least one concrete collar built around it, though, to prevent the seepage of water along the pipe and through the finished dam. At the point where the pipe crosses the ditch which was dug for the clay fill, a concrete collar should be poured at least six inches thick and extending out from the pipe at least a foot on all sides. Two or three of these collars are better than one, but one should be in the clay core.

When the bulldozer starts working, be sure that it takes all the stumps out of the pond bottom and piles them up on the bank. You might want to use a seine in there some day. Be sure, too, that all around the water line he cuts down to a two foot depth on a one-to-one slope. This will help prevent the growth of marginal vegetation. After that it just is a question of scooping out the pond and piling the dirt on the dam. Be sure that every load of dirt put on the dam is well packed as it is leveled out. That is the only way to prevent leaks.

The last, but one of the most important things to build, is the flood spillway. Above the end of the dam fill on one bank cut a trench at least fifteen feet wide so that the bottom of it is just an inch or two above the top of the drain pipe. Flood water will go out there instead of over the dam. As one might say, it's the best dam insurance you can get.

That's the story, Joe. If you have any trouble, let us know and we will try to help. Give our very best Christmas wishes to Mary and the kids.

Sincerely yours,
Harry Cornell

NEW COMMISSIONER

James A. Connelly, Morganton furniture dealer, has been appointed a member of the Wildlife Resources Commission by Governor W. Kerr Scott to fill the unexpired term of the late George Keesee of Gastonia. Besides having a life-long interest in hunting, fishing, and wildlife conservation, Connelly has been active in Wildlife Federation affairs, and is president of the Burke County Wildlife Club.

NORTH CAROLINA

WILDLIFE FEDERATION'S *Annual Convention*

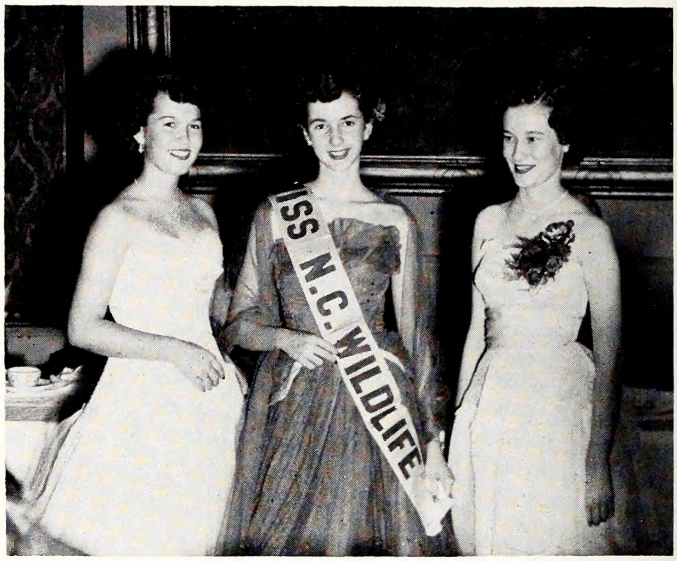
Last October 8, 9, and 10 saw a general migration of Tar Heel sportsmen and conservationists to Asheville, N. C., for the annual meeting of the N. C. Wildlife Federation. Officials of the organization agree with attending delegates that the 1951 meeting was one of the most successful ever held during the years the Federation has been functioning as an important sportsmen's organization. According to Ross O. Stevens, who was again slated to sparkplug the Federation's activities for another year, delegates were present for the meet from 65 different counties.

Several important functions highlighted the two-day meet. On Sunday night delegates began checking in at Asheville hotels and informal gatherings got under way. Official registration began at 10:00 a. m. the following day, and at 3:00 p. m. delegates gathered in the Green Room of Hotel Battery Park to select Miss N. C. Wildlife of 1951. Selected as winner, and supported by a strong delegation from Durham county was Miss Tonya Gamble, a 14-year-old member of the Durham High Junior Wildlife Club, and an accomplished skeet and trap shooter. Runner-up was a comely lass from Wake county, Miss Ann Willis.

At 6:30 Monday evening the Federation held its annual banquet where awards were presented to Miss Gamble, and to Bobby Cooper, Elizabeth City, winner of the 1951 wildlife essay contest. Featured speaker of the evening was Havilah Babcock, famous outdoor writer and sportsman, head of the Department of English at South Carolina University. Babcock pointed out that Man is the worst enemy of wildlife, and that only through education and wildlife management can wildlife resources be perpetuated. The hundreds attending the banquet were deeply impressed with Babcock's profound, yet entertaining address.

Tuesday, October 9 was the date for the Federation's important annual meeting. A slate of officers was elected, with the Rev. Wayne Williams, long active in Federation and conservation affairs elected President. Dr. Herbert Fox of Durham was elected Executive Vice-President; other Vice-Presidents are W. B. Robertson of Rutherfordton, and Major J. L. Murphy, Kill Devil Hill. Harris Lawson, Durham, was elected Secretary.

National Federation President, Claude Kelly, gave an inspiring address to the assembled delegates.



Tonya Gamble of Durham was crowned Miss North Carolina Wildlife of 1951. She is shown with last year's winner, Carolyn Thornburg, also of Durham, and Ann Willis (right) of Wake county, 1951 runner-up.

New officers were elected at a business meeting. Left to right: Major J. L. Murphy of Kill Devil Hill, vice-president; Rev. Wayne Williams of Asheville, president; Roland McClamroch of Chapel Hill, retiring president; Claude Kelly, president of the National Wildlife Federation; and Ross O. Stevens, executive secretary of the State Wildlife Federation.

Photos by Rod Amundson

Havilah Babcock, outdoor writer and head of the English Department of South Carolina University, is shown delivering an inspiring address on conservation during the banquet.

Christmas Tree FOR BIRDS

by Bill Hamnett
Wildlife Education Representative

THE CHRISTMAS SEASON BRINGS US MESSAGES of good cheer, peace on earth and good will toward mankind. It should also make us thoughtful of the beauties of the world that have added to our enjoyment and pleasure of the year that is now drawing to a close.

We can all reflect in our memory an act or inspiration where some bird, animal, fish or beautiful scene has caused us to pause a moment and wonder about the handiwork of God. Perhaps that moment quickened us a little; reminded us of our youth; drew us closer to humility. Maybe then you vowed you would do something to perpetuate the hope of being reminded again through inspiration.

At this season there is much we might do, each in our several ways. But there is one deed we can all join in and feel that possibly we are returning our friendship to the birds which have done so much toward making life more enjoyable. Let us all resolve to give our bird friends a treat during the Christmas season by making a bird Christmas tree.

Each member of your family can contribute to this treat, and all of you will enjoy it. Select a short dense pine tree, about 5 or 6 feet high and set it up in your back yard so it can be easily seen from the house. Gather the family into the living room some night and make plans for decorating the tree. Mary can string raw cranberries on about 20 feet of heavy thread. Bill can pop some popcorn and then have Mary help him string on thread about 25 feet of popcorn. A medium-sized needle will do the trick in getting the berries and popcorn on the thread. Mother can mix up some good stiff biscuit dough and squeeze it out into little round balls about an inch in diameter. While these are being squeezed out a looped thread could be formed in the middle so the dough balls would hang from the branches like the Christmas decorations from the tree in your house. Well now, what can Dad do? He probably will get the tree. While he is out getting the tree he could get about thirty pine cones. Then while the others are at work with their little assignments he could melt down some beef tallow or suet and mix this with peanut butter. Just before the mixture begins to harden he could dip the pine cones in the mixture and fill all the spaces in the cone with suet and peanut butter. This is really a good food for the birds.

Well, all of this having been prepared during an evening of fellowship and a lot of fun it is now time to decorate the bird Christmas tree. Weave in and out the branches the strings of popcorn and cranberries. Hang the balls of dough and pine cones at different places over the branches. When completed you will be rewarded by the visits of the many birds which spend the winter around your home.

It may be that some school rooms may wish to use this idea for a school project at Christmas time and I think it would be needless to say how much pleasure and interest young children would have. If you try this project, drop us a line and let us know what luck you had—how many new birds you saw, what food they liked best, and how much fun you had during Christmas with the birds.

RUFFED GROUSE

from page 5

roaming the woods. Stray dogs plunder the nests, as do skunks and other smaller animals. Birds young and old fall prey to certain hawks and horned owls. The extent to which wildcats prey on grouse is still indefinite, but these large predators undoubtedly take a toll of grouse. Wood-roving housecats take a considerable toll of grouse, especially the young birds. Foxes are known to take grouse, and even bears will make a meal on a clutch of eggs. It is amazing that there remains an important grouse population despite this long list of predators.

Management

The management of ruffed grouse is closely associated with forest management. Grouse must have a wide variety of woody plants to feed on, and these occur only in specific localities. Stands of large virgin timber seldom prove a good grouse habitat. Selective cutting of forest trees establishes openings where understory vegetation can grow abundantly to provide food and cover. Grouse prefer a mixed habitat, with areas of dense tree growth, clearings with shrubby growth, and variations between these extremes. Shrubby borders between woodlands and agricultural lands produce desirable grouse habitat, as do shrubby growths along roadways.

Grouse must have ample spots for dusting and drumming, and these may be provided artificially where nature does not provide them, or where land use practices have destroyed those provided by nature.

Hunting

Grouse hunting is an exacting sport, but one which is gaining popularity in North Carolina. To begin with,

grouse are found only in the more rugged areas of the mountain counties, and considerable physical stamina on the part of the hunter is a prime requisite.

Further, grouse are creatures of dense cover and they get up and fly from cover with terrific suddeness. Just as suddenly they disappear again in another thicket. Seasoned grouse hunters swear the birds deliberately put as much tree growth and brush between themselves and the shotgun as possible. Certainly they make sporting if not difficult targets.

More and more grouse hunters are learning the value of dogs for grouse hunting, not only to retrieve hard-to-find cripples, but to save a great deal of walking over rough terrain to find the birds.

DUCK HUNTING

from page 9

hunters in 28a growls, "That's what they said in 1999, and 1998 for that matter. When are the game officials going to wake up to the fact that we are wasting ducks from old age?"

The next announcement from the radio is as follows: "Gentlemen, it is now 6:58, and I declare the season open." Hardly has his voice died away when there is an explosion in a distant blind. The excitement had been too much for an enthusiastic, trigger-happy, first-year man. There are no ducks in sight. In five minutes, though, a fine flock of mallards (the only species huntable) swings out of the grey of the western sky toward the marsh. The little radio announces again, "Sixty-nine mallards, having left marsh 1687 about midnight, are approaching marsh 3751 at 10 o'clock, present elevation about 450 yards. Do not shoot, for a helicopter is approaching to take wounded man from blind 87. Watch your shooting, gentlemen! There are hunters on this marsh."

The helicopter successfully chases the ducks away, and occasional announcements give information on the direction and elevation of the flock as it wings toward other marshes to the south.

Then there is a period of silence followed by, "It is now 7:58. All blind occupants will leave and make room for the next group of hunts." "Well," says one of our party, "This was fun; a lot more than last year. Remember, Joe, we didn't see a duck then, and not a hunter was shot."

FIELD TRIALS

from page 11

lective process until only those hounds of superior stamina and ability remained for the final judging held Friday, October 11.

Bright, windless days and moist cover provided ideal conditions for the Thursday and Friday trials. The welkin rang, as it can only when more than 100 foxhounds in one pack are hot on the same trail.

In the annual business meeting held Thursday night, Dr. J. H. Cutchin of Roanoke Rapids, North Carolina, succeeded I. T. Wilkerson of Concord, North Carolina, Fred Ellis and Alonzo Burris of Lincolnton, North Carolina, were re-elected secretary and treasurer respectively of the N. C. State Foxhunters Association. The Association officially adopted the Yanceyville area for a permanent home for their annual trials and H. C. Kennett of Durham, North Carolina, Wildlife Commissioner for the 5th District, assured the members that the Commission would cooperate with the Association in developing the area.

BENCH SHOW WINNERS

BEST DERBY DOG AND BEST IN SHOW — *Happy Jack*
Owned by John Laney, Maiden, N. C.

BEST DERBY FEMALE AND BEST OF OPPOSITE SEX — *Burris Hill Carolina*
Owned by Burris Hill Kennels, Lincolnton, N. C.

BEST ALL AGE DOG — *Blaze Winn II*
Owned by Bill Welch, High Point, N. C.

BEST DERBY FEMALE — *Mary Keel*
Owned by R. V. Keel, Greenville, N. C.

DERBY FIELD TRIAL WINNERS

Place	*Name*	*Owner*	*Address*
1	Little David	J. B. High	Durham, N. C.
2	Sadie	Roy Reed	Winston-Salem, N. C.
3	Grey Side	H. L. Mays	Taylorsville, N. C.
4	Pete	Pine Ridge Kennels	Salisbury, N. C.
5	Fritz C.	Dr. J. H. Cutchin	Roanoke Rapids, N. C.
6	Tar River Dude	S. E. Lamm	Rocky Mount, N. C.
7	Alex	Gene Beaver	Concord, N. C.
8	Mose	Russell Pool and W. C. Walker	Durham, N. C.
9	Billy	W. O. Hendrix	Tobaccoville, N. C.
10	Al	J. B. Williams	Statesville, N. C.
Combination Winner	Pete	Pine Ridge Kennels	Salisbury, N. C.

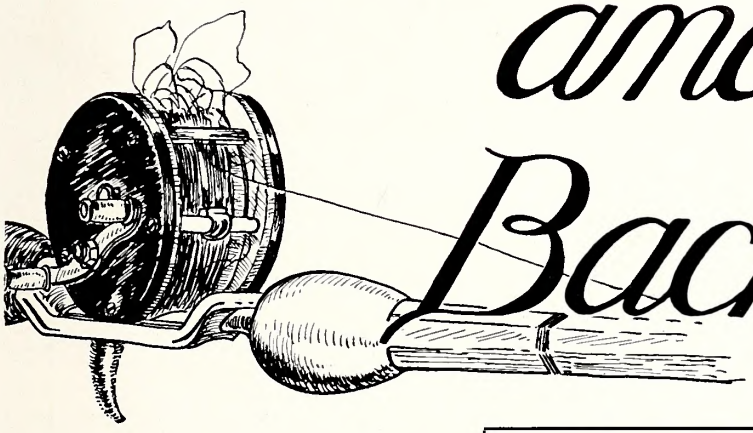
ALL AGE FIELD TRIALS

Since no out of state hound placed first in the all age trials, the hound placing first is to be declared the North Carolina Champion in addition to being the winner of the annual trial. This is in accordance with the agreement between the Tar Heel Championship Field Trials Association and the North Carolina Foxhunters Association. Hence, Domino, the big able hound owned by Buck Murphy, of Bahama, N. C., becomes the first North Carolina Champion.

Place	*Name*	*Owner*	*Address*
1	Domino	Buck Murphy	Bahama, N. C.
2	Jane	G. W. Blalock	Norwood, N. C.
3	Tom Boy	James East	Kernersville, N. C.
4	Mack	Donald Ireland	Minnesott Beach, N. C.
5	Riley	R. L. Hester	Winston-Salem, N. C.
6	The Wampus	C. C. Johnson	Statesville, N. C.
7	Little Buck	P. W. Tysinger	Reidsville, N. C.
8	Zeb Crook	Weaver Meggs	Marshfield, N. C.
9	Ona Boy Stride	Purvis Bros.	Robbins, N. C.
10	John Fowler	W. E. Moore	Winston-Salem, N. C.
Combination Winner	Cry Baby	Purvis Bros.	Robbins, N. C.

The common shrew will eat twice its own weight of food each day. It will starve to death in 2 or 3 hours if food is not obtainable.

Crack Shots and Backlashes



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By
WIN DONAT

MANY OF THE PACKAGES THAT WILL APPEAR under gaily decorated trees apparently growing in homes all over the state comes the 25th will bear labels reading "Don't Open 'Til Christmas." For many sportsmen, the hunters in particular, gifts from the land in the form of game we hunt, will be opened and sampled by the time this is read.

What sort of a season have we had so far? What sort of a season will we have for the remainder? The answer to both these questions lies within ourselves. Have we gone out solely for the quantity of meat we could bring home, or the most fun we could have? Are we going out during the remainder of the season to the place where we know that there is still a part of a covey left, or seek larger coveys?

Here it is the middle of the season. What about that boy? Have we taken him on a hunt? Sure, he's been hunting more than we have but he hasn't been out with us Dads. That's the big thing—and *Dad is the big thing in his life*. Let's ask him to go with us next Saturday and see how quickly he'll cancel his date with the other fellows!

Finally, because it is the end of another year with its season of good wishes to all, I want to say that you have been fine folks to know and to work with and I personally, as well as all of us in your Wildlife Resources Commission, want to take this opportunity to extend to you our sincerest gratitude for your cooperation and our very best wishes for the good things of life in the years to come.

Win Donat

Mr. W. F. Trollinger of Burlington, North Carolina, has been concerned with some of the things we have talked about many times on this page. It makes us wonder "Why do bills which would prohibit the sale of rabbits and squirrels fail when they are considered by the General Assembly?" Mr. Trollinger's letter follows:

"Enclosed please find fifty cents in coin for a one year subscription to WILDLIFE IN NORTH CAROLINA. You have a really enjoyable and educational magazine. I hope that in the future you will print more about our beagles and articles that will educate and encourage in preserving our game. Also something that will go out and discourage our present day game hog.

"Will you please send me at once fifty of the posters 'Convert Game Hogs' or something to this effect. I have seen some of them. Some of the fellows and I wish to put them up in our section.

"I didn't get to attend the wildlife hearing held here last spring. Here are some laws I would like to see passed and enforced: (1) No hunting party (regardless of how large the crowd) can take more than eight rabbits per day, and no one person more than two rabbits per day. (2) No trapped or shot rabbits can be sold, except that live rabbits can be sold and transported from one area to another for the purpose of restocking. Since rabbits bring a fair price for food, we find our folks hunting and killing them just to 'sell.'

"Two years ago a friend and I went to a nearby section of good running grounds where game was plentiful. We took four rabbits, had some very good running, and lots of fun. Later in the season we returned to the same running grounds and it was very disgusting. A crowd of 'game hogs' had been in there and swept the grounds. I learned that they had killed thirty-two rabbits in one afternoon.

"We hope to see some of you fellows at our Beagle Pack Trial, to be held at Yanceyville on Saturday, September 22. One of my 15-inch males will be a contestant.

"Thanks to you fellows for the fine work you are beginning."

Mr. William D. McLean of Maxton, North Carolina, pays us a compliment not only on our work but by his intentions to enter the field of forestry as a profession. We wish him well and hope that his influence will be great in the field of resource conservation.

"May I congratulate you and your staff on the excellent work in informing the public of our state on wildlife conservation?

"Although I have been subscribing to the magazine for only one-half year, it has helped me a great deal.

"During the past year I have been a leader of an Audubon Bird Club, as well as a Junior Fire Warden. As soon as I graduate from high school I am planning to go to a forestry school for four years. In the Boy Scouts I hold the merit badges for forestry and conservation and have applied for the Hornaday Award. You have my support in your work."

Editor
Wildlife in North Carolina

Dear Sir:

I am enclosing a mimeographed letter setting forth a resolution for the consideration of all the members of North Carolina Wildflower Preservation Society. This form was mailed out and the majority of the members have already expressed themselves as heartily in favor of this idea.

We wish to cooperate with the North Carolina Wildlife Resources Commission and we hope that you will not only approve the steps we are taking, but that you will publish our resolution, or make comments in such a manner as to bring to public notice the action of the Wildflower Preservation Society in regard to Christmas greens. We would like for the people of the State to know how we feel about this matter.

Yours truly,

Dr. Alfred Mordecai
Winston-Salem

RESOLUTION

Whereas, the interests of the N. C. Wildflower Preservation Society are closely interwoven with those of the Garden Sections of N. C. Women's Clubs and,

Whereas, we are in sympathy with the programs and efforts of all state agencies that are concerned with Forest, Soil, Stream, and Wildlife Conservation and,

Whereas, it has become the practice in this state, as well as the entire country, to waste vast amounts of wild plant life, particularly the evergreens, by extravagant street and store decorations during the Christmas Season for the enhancement of commercial interests and,

Whereas, a large per cent of the so called "Christmas Greens" are not honestly produced as "Crops," but gathered by Tom, Dick, and Harry from almost any available source and,

Whereas, certain plants such as the American holly, Trailing Cedar, Spray leaves, etc., are becoming more and more scarce,

WHEREFORE, Be It Resolved That;

The North Carolina Wildflower Preservation Society go on record at this time as frowning upon and disapproving the extravagant decoration of streets of towns and cities of the state with evergreens during the Christmas Season, unless such materials are purchased from registered nurseries or from legitimate owners of land who grow such evergreens for the trade and who are approved by the State Department of Conservation and Development and that,

N. C. Wildflower Preservation Society encourage and cooperate with, all conservation agencies and organizations in this state in any effort they may make in the field of education or legislation, or any other well considered plan to prevent the unwise and extravagant waste of wild plant life, which naturally and rightfully belong to our fields, forests, and watersheds and that,

All members of N. C. Wildflower Preservation Society take active steps as follows:

(1) To obtain from our State Department of Conservation and Development information concerning Christmas Greens. Their Protection, Use, and Cultivation.

(2) To urge that every community appoint a Christmas Greens Committee, whose duty it shall be to secure the cooperation of all organizations (Civic Clubs, Churches, Merchants Associations, etc.), and insist upon conservative practices, and upon the purchase of evergreens (or evergreen substitutes) from sources where there exists due regard for the future; where such products are grown for the purpose and harvested under State, or Federal supervision.

(3) To ask the newspapers to run articles denouncing wasteful practices and encouraging the conservation of Christmas greens, particularly *holly, laurel,* and *ground pine.*

(4) To advocate the use of Christmas greens substitutes in accordance with the recommendations of our State Department of Conservation.

More About High Snakes

Mr. Malcolm Edwards, Wildlife Refuge Supervisor in the western areas, adds this information:

"In reading 'Get It Off Your Chest' in the September, 1951, issue of WILDLIFE IN NORTH CAROLINA, I notice that Mr. J. L. Grimshaw of Flat Rock, N. C., mentions rattlesnakes being seen as high as 5,000 feet, but none above. I thought you might be interested in hearing of one at approximately 5,400 feet, which was killed on the Sherwood area this summer.

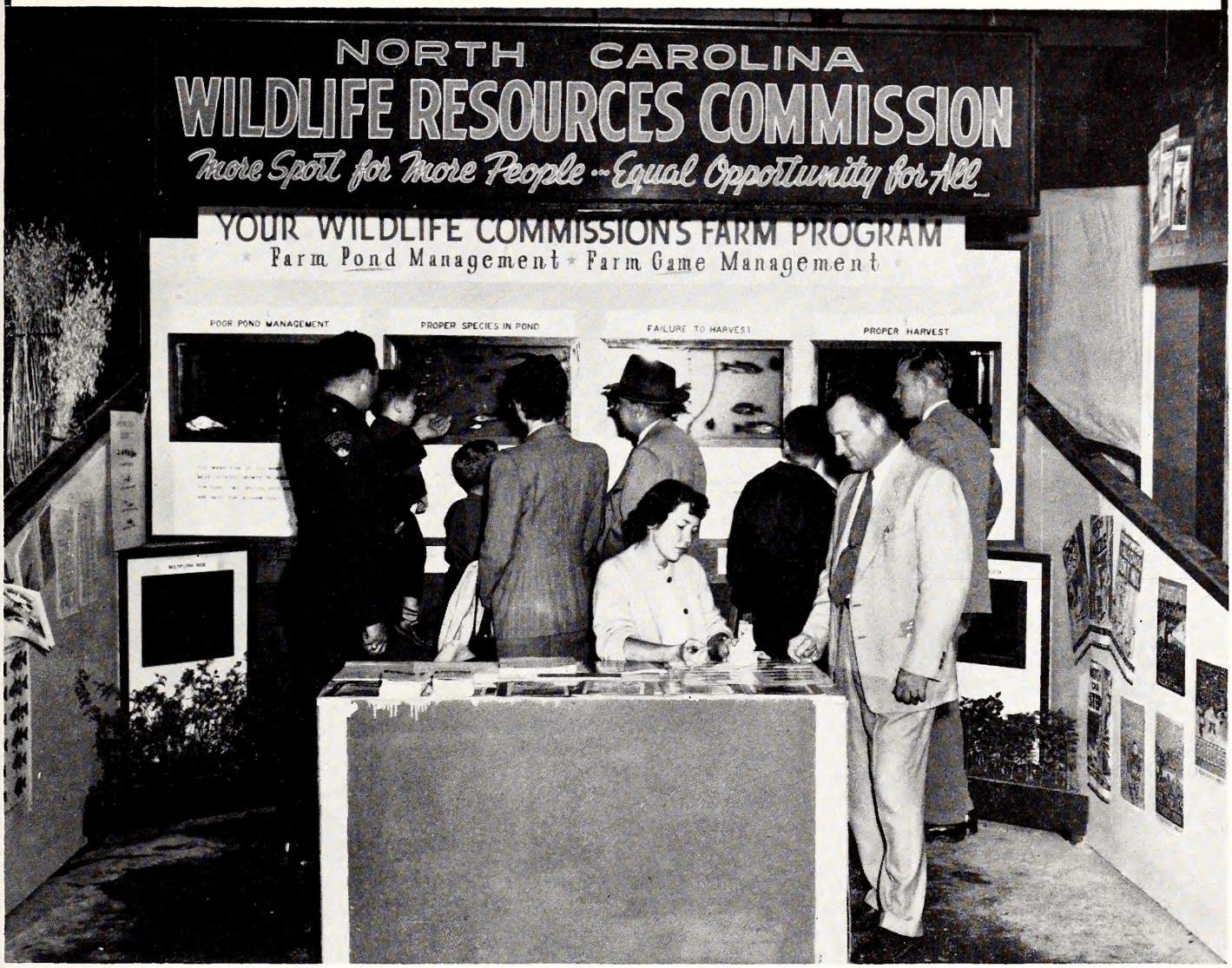
"On July 31, 1951, Mr. Ralph Conway, Mr. Robert Hazel, Mr. Frank Barick, Mr. Rex Bird, and I were on an inspection trip on Flat Laurel Branch in the Sherwood Wildlife Management Area in Haywood county. We came upon a large timber rattler in the road, which after dispatching was measured and found to be 44 inches long. I checked on the topographical map, and as near as I can tell the spot on which the snake was killed is at 5,400 feet. We have killed another since, at about 5,000 feet on the same area. As a rule, however, we find very few rattlesnakes above 4,500 feet."

Believe This If You Will

While attending the beagle pack trials at Yanceyville, mentioned elsewhere on this page, I came across a part of the gallery resting at the edge of a field. While talking with the fellows I heard a peeping sound such as made by a young chicken.

One of the spectators, whose name I do not have, held in his hand a young Hampshire red chick which had grown enough to have its primary flight feathers as well as back and tail feathers. It seems that while following the pack through a woods, two men stopped to listen and heard this chick peeping nearby and just about the time they discovered it, a hen quail appeared from the brush and proceeded to feed the chick with a fat bug! The chick stood with fluttering wings and mouth open and was no stranger to the procedure. When the men moved, the quail flew and the chick dove into the nearest cover. The point where this incident occurred was at least one-half mile from the nearest habitation! How this strange relationship came about we can only guess. We cannot help but wonder if you know of any similar occurrences?

WILDLIFE COMMISSION'S STATE FAIR EXHIBIT



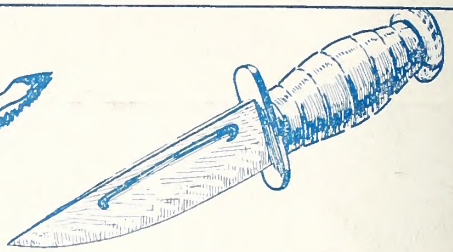
The Wildlife Resources Commission displayed an educational exhibit at the 1951 State Fair held in Raleigh. The exhibit was designed to demonstrate the essentials of sound fishpond management and to acquaint the public with the Commission's Farm Game Restoration Program. Live fish were kept in huge glass tanks to show the effects of poor pond management, proper species for ponds, the results of failure to harvest, and the results of proper harvest. It was emphasized that poor fishing usually arises from too little fishing rather than too much and that most farmponds are not fished heavily enough. Living bicolor lespedeza and multiflora rose seedlings and seeds for planting annual food patches were displayed with translucent photos of their respective uses on the farm for wildlife habitat improvement. Wildlife protectors and other Commission employees were present each day to explain the exhibit to visitors and to sell subscriptions to *Wildlife* in *North Carolina*.

The course of events in the North Carolina Wildlife Resources Commission's conservation program is not controlled by force. There are other powers at work in the conduct of its affairs. There is the power of ideas; the power of cooperation and teamwork; the power of truth and honesty; the power of justice; the power of love; the power of conscience; and above all the power of righteousness and faith unto Almighty God.

—Clyde Patton

SAVE THAT TROPHY

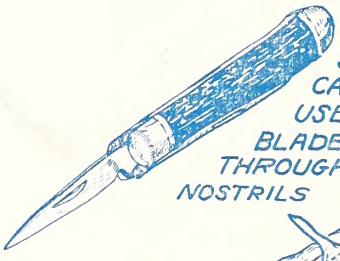
MANY A FINE TROPHY IS LOST OR RUINED THROUGH BAD PREPARATION OR DELAY



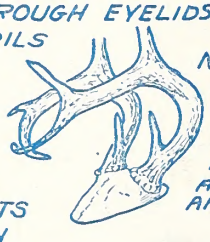
USE A SHARP STRONG KNIFE TO MAKE THE CUTS AT A AND C - WITH THE CUTTING EDGE UP INSERT THE POINT AND MOVE THE KNIFE UP & FORWARD AT THE SAME TIME - ITS BETTER TO TAKE TOO MUCH RATHER THAN TOO LITTLE SKIN FROM THE SHOULDERS

IF YOU MUST BLEED HIM - CUT AT BASE NOT SIDE OF NECK PLACE IN DOWNHILL POSITION SO DRAINAGE IS EASY AND COMPLETE

CUT ALONG LINE C TO EACH ANTLER AS INDICATED - USE BLUNT INSTRUMENT SUCH AS A SCREW DRIVER TO FREE SCALP AROUND ANTLERS - SKIN ALONG C AS FAR AS POSSIBLE THEN CUT MEAT AND SPINE AT B

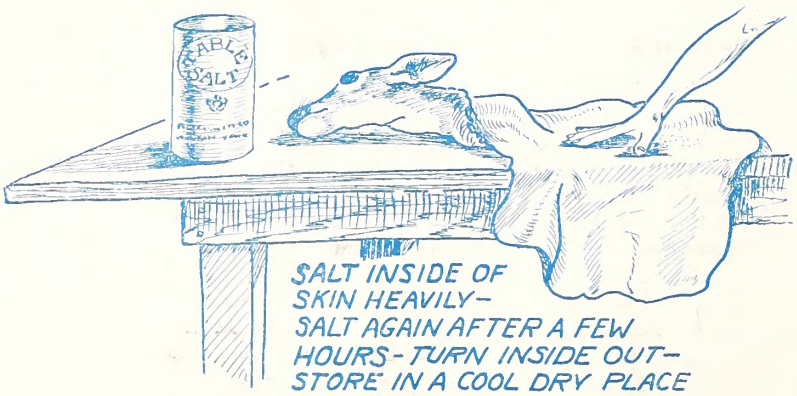


CUT EARS CLOSE TO SKULL - SKIN OUT CARTILAGE IN EACH - USE A SMALL KEEN BLADE - DON'T CUT THROUGH EYELIDS, LIPS OR NOSTRILS



NEXT, SAW SKULL SO THAT A GOOD PART IS LEFT ATTACHED TO ANTLERS

CLEAN BLOOD CLOTS OFF INSIDE OF SKIN AND SCRAPE OFF EXCESS FLESH AND FAT



SALT INSIDE OF SKIN HEAVILY - SALT AGAIN AFTER A FEW HOURS - TURN INSIDE OUT - STORE IN A COOL DRY PLACE FOR ABOUT ONE WEEK

SHIP SKIN AND ANTLERS TO YOUR TAXIDERMIST - STATE THAT THE HEAD IS TO BE TURNED LEFT-RIGHT OR STRAIGHT - ALSO SEND FOLLOWING MEASUREMENTS TAKEN BEFORE SKINNING:

1. DISTANCE AROUND THROAT
2. FROM BASE OF SKULL TO TIP OF NOSE
3. FROM CORNER OF EYE TO TIP OF NOSE

Win Donat

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